

**Barriers and potential solutions to effective pain
management on a gastro-intestinal ward: an action research
study in a university hospital**

Gareth Drake

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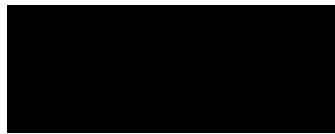
University College London

UCL Doctorate in Clinical Psychology

Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:



Name: Gareth Drake

Date: 17.06.15

Overview

Volume 1 of this thesis is divided into three parts. Part 1 describes a systematic review of nursing educational interventions for pain management in acute hospital settings. It demonstrates some positive findings in relation to improvements in nursing pain assessment and documentation following educational interventions. However, the reviewed studies focussed little on the relational, contextual and emotional factors involved in pain management. Part 2 describes an empirical study in which an action research approach was used to examine pain management barriers with nursing staff on a gastrointestinal ward. Themes from the ethnographic phase of the study were reflected on with staff and a range of potential solutions were generated, many of which centred on the idea of separating pain from distress and aiming to target nursing resources at the management of patient distress. The final part of this volume is a critical appraisal of the research process, in which the challenges of working as a clinician-researcher in a medical setting are discussed.

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Part 1: Literature Review

**Nursing educational interventions for the management of acute pain in
hospital settings: a systematic review of clinical outcomes and teaching
methods**

Abstract

Aims: The current review examined the effects of nursing educational interventions on clinical outcomes for acute pain management in hospital settings, with emphasis given to the teaching methods used. The review also aimed to map these teaching methods onto known domains involved in healthcare behaviour-change, with reference to constructs developed by Michie and colleagues (2005).

Methods: Three databases, Embase, Medline and CINAHL, were searched for experimental, quasi-experimental and observational studies, published between 2002 and 2015, that investigated nursing educational interventions in acute hospital settings and reported clinical outcomes. Included studies were appraised for quality using the Effective Public Health Practice Project Quality Assessment Tool for quantitative studies (EPHPP).

Results: Twelve studies were reviewed. A range of didactic and interactive teaching methods were used in the studies. These mapped onto many domains theorised to be involved in healthcare behaviour-change, though the studies did not explicitly reference the theory underlying the design of their interventions. All except four studies investigated nursing documentation of pain assessment as the main clinical outcome, with the majority finding positive effects of educational interventions on nursing pain assessment. Of the remaining studies, one used patient satisfaction with pain management as the main outcome, two included patient self-report of pain scores as the key measure and one study measured changes in nurses' delivery of a relaxation intervention for pain after an educational intervention. These findings were mixed with some positive outcomes in patient satisfaction and reductions in self-reported pain scores following nursing interventions.

Conclusions: More needs to be done in the design of nursing educational interventions to factor in existing theory on behaviour-change as well as to give emphasis to the relational, contextual and emotive nature of nursing pain management in hospital settings.

Introduction

Pain has been defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage” (International Association for the Study of Pain (IASP) 1986) and, along with temperature, blood pressure, respiration and pulse is one of the vital signs to be assessed on hospital rounds in the United Kingdom (Royal College of Surgeons, 1990). Despite this stipulation, acute pain remains sub-optimally managed with varied quality and provision across the UK (Duncan et al., 2014). Poor acute pain management in hospital settings can lead to a range of adverse consequences including post-surgical complications, and prolonged stays in hospital which, in turn, lead to increased costs of healthcare (Mackintosh, 2007; Sinatra, 2010). However, with sufficient resources and by following guidance for best practice, it is possible to adequately manage acute pain to minimise patient suffering and prevent such complications (IASP, 2010; Kehlet, Jensen, & Woolf, 2006).

Nurses play a key role at every stage of pain management in hospital settings and are often the first to respond to patients in pain (Bucknall, Manias & Botti, 2007). Traditionally, nurses have been thought of as the ‘caretakers of suffering’, with their role being the provision of comfort and alleviation of distress (Morse, Bottorff & Hutchinson, 1994). However, as neurobiological understandings of pain mechanisms have developed along with increasing options for pharmacological interventions to alleviate pain (Turk & Melzak, 2011), the role of the nurse has broadened. Responsibilities in routine care, as illustrated on a recent NHS job advertisement, now include knowledge of proper pain assessment, basic prescription, understanding of titration and training on machinery to operate patient controlled analgesia (NHS, 2015). This range of responsibilities, especially the more recent challenges of prescription (Courteney & Carey, 2008) and proficiency in the use of standardised pain assessment tools (McCafferty & Pasero, 1999) have brought added pressures to ensure best practice.

Barriers to pain management relating to nursing practice have been shown at assessment and treatment stages. Due to the private nature of pain, adequate assessment, based as far as possible on patient report, is essential for highlighting implicated pain mechanisms and potential treatments (Turk & Melzack, 2011). Nurses have been shown to both under-assess pain (Sloman, Rosen, Rom & Shir, 2005) and to rely on their own subjective judgements of pain ahead of patient report, despite patient report being defined as the primary indicator (McCaffery & Pasero, 1999). When treating pain, unsubstantiated fears of analgesic side-effects as well as a lack of knowledge in pharmacological and non-pharmacological resources have been found to hinder optimal nursing responses (Liu, So & Fong, 2008; Sloman et al., 2005).

Deficits in nursing knowledge of pain mechanisms, assessment procedures and treatments are thought to contribute to inadequate pain management. Pain education during nursing training is basic - a recent systematic review of eleven studies indicated that nursing students worldwide had inadequate pain knowledge of and misconceptions about pain management (Chow & Chan, 2014). After qualification, gaps in knowledge have shown to be an important barrier to adequate pain management; an institutional needs assessment that aimed to improve pain management for postsurgical patients found important skills deficits, particularly in nurses' ability to recognise signs and symptoms of pain (González-Fernández et al., 2014).

Targeting nursing knowledge of pain management has been understood as central to improving pain management practice; nursing education has formed a central component of many new pain initiatives introduced in hospital settings since its elevation to the fifth vital sign (e.g. Gordon, Pellino, Enloe & Foley, 2000; Kaasalainen et al., 2014). In the UK, the Department of Health recommends that nurses engage in 'lifelong learning' (DoH, 2000) and, despite existing gaps in knowledge, research has shown that improvements in nursing knowledge and

beliefs are possible after educational interventions (Gunnarsdóttir & Gretarsdottir, 2011; McNamara, Harmon & Saunders, 2012). Three of the six studies reviewed by Gunnarsdóttir and Gretarsdottir (2011) that reported clinical patient outcomes found improvements after educational interventions. However, the author noted that many of the papers reported solely on changes in nursing knowledge and attitudes as outcomes. This is problematic as new learning does not necessarily translate to changes in nursing clinical practice. Nurses have reported not following best guidance even when they were aware of it (Watt-Watson, 2001) and observations of practice have highlighted a discrepancy between what nurses said they did and what they did in practice (Dihle, Bjolseth & Helseth, 2006).

It is thus important to understand what might be the 'active ingredients' of nursing interventions for pain management that bridge the gap between saying and doing: to examine what, beyond the acquisition of knowledge, contributes to changes in clinical practice. The World Health Organisation (WHO, 1988) states that competence in a task requires practical skills as well as supporting attitudes and knowledge. The interventions that led to clinical improvements in the review by Gunnarsdóttir and Gretarsdottir (2011) included a brief intervention with individualised feedback, and two more comprehensive interventions that used role models and an evidence-based algorithm in one case, and over thirty hours of nursing education in the other. A review in a similar field highlighted the important role of the educational strategies and methods of teaching employed in nursing interventions (Twycross, 2002). The author found that pedagogical techniques, while important for introducing new concepts, did not translate beyond improvements in knowledge if more autonomous, learner-led activity was not facilitated. Similarly, a Cochrane review of the effects of continuing education meetings on professional practice found small effects from educational meetings where feedback on performance was given (Forsetlund et al., 2009). Based on the evidence reviewed, the authors recommend that focussing on outcomes that staff consider to be

important, as well as mixing didactic with interactive styles of teaching, can increase the effectiveness of educational interventions. Involving nurses in decision-making outcomes has been found to reduce the gap between saying and doing in nursing practice (Dihle et al., 2006). This echoes positive outcomes in nursing interventions that targeted decision-making (Chan, 2013) and promoted autonomy, allowing space for nursing staff to reflect on changes to practice (Brown & McCormack, 2011).

This complexity points to the idea that there is “no magic bullet” for improving clinical practice (Oxman, Thomson, Davis, & Haynes, 1995) and that the context in which learning takes place as well as the teaching methods used are important for translating learning into changes in practice (Wensing, Weijden & Grol, 1998). Taking the ineffectiveness of implementing evidence-based guidelines and absence of theory in the design of interventions as their starting point, Michie and colleagues (2005) aimed to summarise psychological theory relevant to behaviour-change for the use of individuals designing evidence-based guidelines in healthcare. An extensive review of literature and expert consultation led to 128 explanatory constructs drawn from 33 psychological theories. These were distilled into 12 domains pertinent to healthcare behaviour-change. The domains cover knowledge and skills but extend to motivational factors, the context in which learning takes place, beliefs about capabilities, and the perceived role of the learner (Michie et al., 2005). These domains map onto constructs – the presence of a strong intention, self-efficacy, necessary skills and no constraints that make the task impossible - arrived at independently in previous research (Fishbein, Triandis, Kanfer, Becker, & Middlestadt, 2001), suggesting a degree of validity. This consensus framework is recommended for use in implementation research and steps have been taken to demonstrate how it can be used to develop behaviour-change techniques (Michie, Johnston, Francis, Hardeman, & Eccles, 2008).

A consideration of the relevance of these domains to nursing educational interventions in pain management is important, particularly given previous mixed findings and the notable absence in the majority of previously reviewed studies of any reference to the theory that guided the design of interventions (Gunnarsdóttir & Gretarsdottir, 2011; Twycross, 2002). Nurses, as key figures in pain management, are under enormous pressure to adequately assess and manage pain in acute hospital settings. Research has found barriers to optimal pain management in nursing assessment and treatment, but previous studies of nursing educational interventions have not always demonstrated improvements in practice. This may be because such interventions do not address domains involved in behaviour-change that go beyond the acquisition of knowledge and skills to include motivational and contextual factors relating to nursing involvement in planning interventions, the relevance of outcomes, nursing autonomy, feedback and decision-making.

Aims

The current review examined the effect of nursing educational interventions on clinical outcomes for acute pain management in hospital settings, with emphasis given to the teaching methods and techniques used. Three questions were initially addressed:

1. What types of nursing educational interventions have been implemented to improve pain management in hospital settings?
2. Do nursing educational interventions to improve pain management yield positive clinical outcomes?
3. Is there a relationship between the type of pain management intervention and the clinical outcome?

The results conclude with an exploratory examination of the relationship between known domains involved in behaviour-change, as distilled by Michie and

colleagues (2005), and the style, content and techniques of the interventions in the papers reviewed:

4. Do the teaching methods used in the nursing interventions reviewed map on to existing behaviour-change domains?

The aim of this fourth question was to judge how comprehensively the interventions in the reviewed papers address the domains currently evidenced as central to healthcare behaviour-change.

Method

Literature search

An initial free text search of Google Scholar was performed to generate terms for a systematic search. On 09.04.15, 'nursing educational interventions acute pain' yielded approximately 139,000 results. A scan of the first 50 results gave useful keywords from several relevant papers (including, from studies kept after a review of abstracts, Abdalrahim et al., 2011; Bardiau et al., 2003; Decosterd et al., 2007 & Mac Lellen, 2007). Further searches using Google Scholar of studies which had cited these papers (Abdalrahim et al. n=37; Mac Lellen n=99, Bardiau n=151, Decosterd n=60) highlighted further relevant papers that were scanned for key words (including, Lin et al. (2008); Ene et al. (2008); Hansson et al. (2006)). Together, these papers were used to generate a search strategy, which was finalised with the input of a subject-specific university librarian proficient in database search strategies.

Search strategy

Three electronic databases - Embase, Medline and CINAHL (Cumulative Index to Nursing and Allied Health Literature) - were chosen for their distinct but complementary and comprehensive coverage of medical, psychological, biological and nursing research (Petticrew & Gilbody, 2004). On 11.04.15, these databases

were searched using the following terms, subject headings and keywords in abstract and title (see Appendix A for full search terms):

Nursing education OR staff training OR staff education OR education programme OR health education

AND

Pain OR Pain measurement OR pain assessment OR Pain management OR Analgesia

AND

Acute pain OR Acute disease OR Postoperative Pain OR Surgical Pain OR Postsurgical Pain

(Limits: 2002-2015, English Language)

Following this search, inclusion and exclusion criteria were applied to further filter down the retrieved studies.

Inclusion criteria

- Experimental, quasi-experimental and observational studies involving educational interventions targeted at nurses in acute or surgical pain settings, where quantitative clinical outcomes were reported.
- Programmes or initiatives targeted more broadly at a range of professionals in a hospital setting where the effects of any nursing education component could be delineated from any impact of wider changes
- Published in English, in peer reviewed studies from 2002 to April 2015.
This start date was chosen to avoid including papers reviewed previously by Twycross (2002) in a similar study of nursing educational interventions to improve pain management. Only papers in English were reviewed due to a lack of resources required for translation.

Exclusion criteria

- Studies that did not provide a clinical outcome. For example, those where only nursing knowledge and beliefs were reported.
- Studies where education was part of a wider initiative, for example, the introduction of a pain team or other new staff members or a change in medication protocol, where any specific effects of a nursing intervention could not be distinguished from other effects.

Data extraction

Data on participants, setting, intervention and outcomes were extracted from each of the papers chosen for the review, in accordance with recommendations from the Centre for Reviews and Dissemination (2009). Previous studies of behaviour-change theory and healthcare interventions (Michie et al., 2005; Forsetlund et al., 2009; Twycross, 2002) provided useful guidance for the extraction of more in-depth data on the content and methods of the interventions.

Quality Rating

Studies reviewed for the current paper were mainly undertaken in clinical settings as part of routine practice, making the judgement of quality different from reviews of RCTs of treatment. The Cochrane Handbook for systematic reviews (Higgins & Green, 2011) recommends two useful tools identified for health related research in non-controlled environments where the RCT template is not typically applicable: the Downs and Black instrument (Downs & Black, 1998) and the Newcastle-Ottawa Scale (Wells et al., 2011). A review that employed the Downs and Black (1998) scale found that several items were difficult to apply to some quasi-experimental designs, that the instrument required a substantial level of epidemiological expertise and that it was time-consuming to use (MacLehose,

2000). However, the Newcastle-Ottawa Scale, an eight-item measure with greater ease of use (Higgins & Green, 2011), is not suitable for quasi-experimental designs.

Given these difficulties a further search was undertaken. The Cochrane Public Health Review Group (Armstrong et al., 2008) recommends a third measure: the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies (EPHPP). This scale suited the requirements of the current review in its treatment of mixed methodologies and relevance to public health research. The scale comprises six components that contribute to a global rating (see appendix B). Two further components that rate intervention integrity and quality of analyses were found to have low inter-rater reliability and to not contribute to the global quality rating (Thomas, Ciliska, Dobbins, & Micucci, 2004), so were not used. Table 2 provides an extended examination of the style, content and techniques employed in the educational interventions reviewed. GD performed ratings on all papers and AW rated a subset of five papers. Discrepancies were discussed with reference to the accompanying dictionary until consensus was reached (see appendix C).

A note on terminology

Some studies in the review referred to similar designs using different terminology. Following guidance from Eccles, Grimshaw, Campbell & Ramsay, (2003), 'uncontrolled before and after' designs, employed by the majority of studies in the current review, refer to a single pre-test observation and a single post-intervention observation, with no control group. 'Controlled before and after' designs are identical except for the inclusion of a control group. 'Interrupted time series' studies are those with multiple observation points before or after an intervention. 'Controlled clinical trials' are those studies where efforts were made to assign participants randomly, but due to the real-life clinical setting of the study, without the rigour of an RCT. 'Observational studies' refer, in the current review, to studies that usually took place over a longer time period, where participants were not recruited to

the study, but rather data from a cohort is reviewed retrospectively usually before and after an educational or pain initiative that was also not under the control of the researchers.

Results

Figure 1 illustrates the systematic process that resulted in twelve papers for review. Fifteen studies read as full papers were excluded for: implementing an intervention that targeted other clinical staff as well as nurses so that any effects on nursing pain management could not be delineated (n=7), introducing a change to hospital medication protocol as part of the intervention (n=6), only introducing a new documentation tool with no education (n=1) and only reporting qualitative data (n=1) (see appendix D).

Quality assessment

Process: After rating a subset of papers using the EPHPP, AW and GD discussed differences until a final global rating was agreed on for each paper. This is included in table 1 (see appendix C for full ratings). Of note during discussion was a disagreement on component E, the validity and reliability of the outcome measure. After discussion, it was agreed that, where the outcome was binary, such as presence or absence of a nursing pain assessment, the measure would be deemed reliable and, in accordance with the EPHPP dictionary, the mention of previous validation in a previous study sufficed to guarantee validity. This helpfully differentiated between papers that at least addressed validity in this way and those that made no mention of validity. However, given the application of the measures to new settings in the reviewed papers, and the powerful contextual factors present in pain assessment, it should be made clear that doubts remained over the ecological validity of several measures scored as valid.

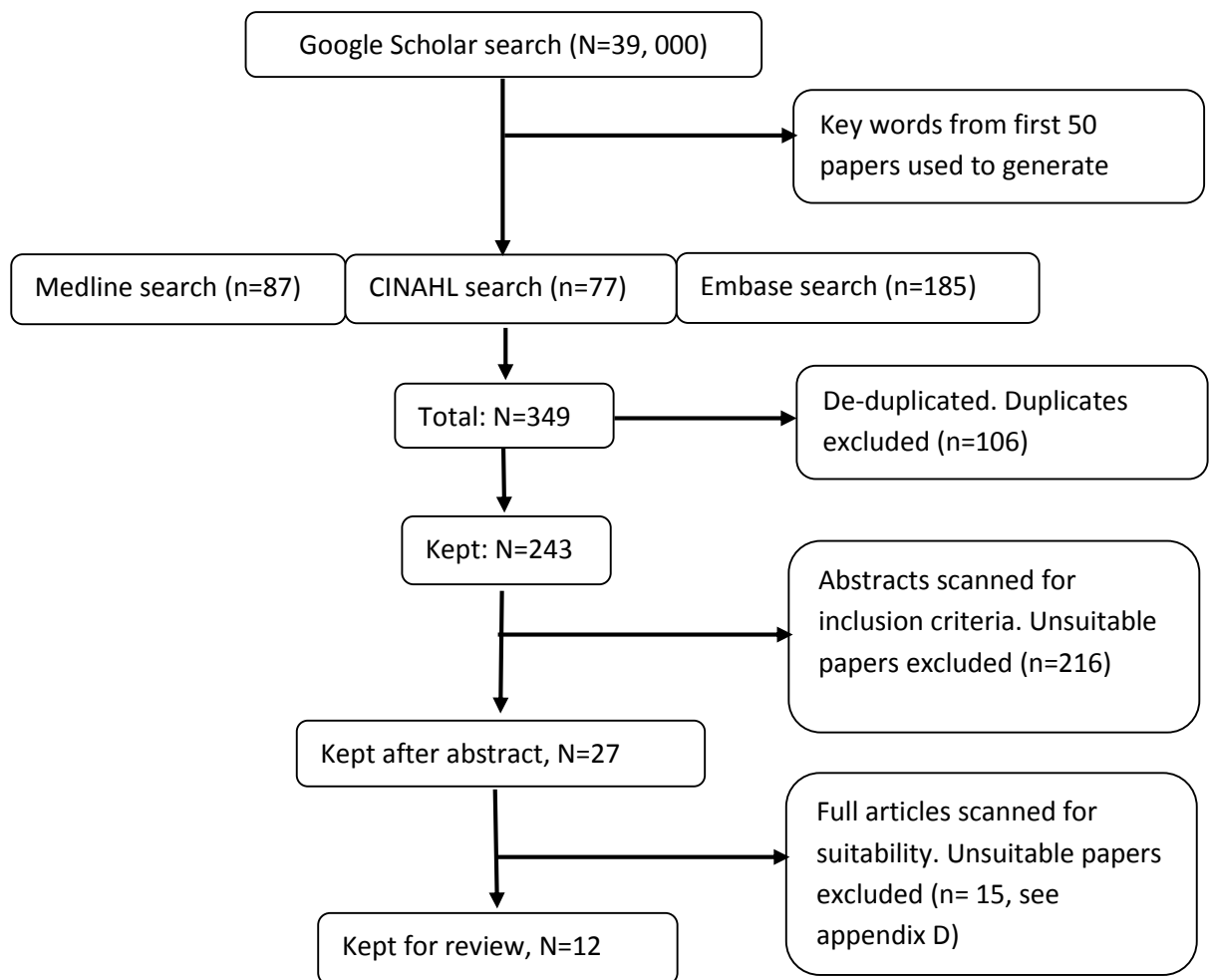


Figure 1, flowchart of review process

Some studies reported patients as participants, although they were neither recruited directly nor asked for consent, and others reported staff as participants, which made comparison across studies difficult. The majority of studies reported nursing assessment or documentation taken from an audit as the main outcome measure. They included patient numbers simply to indicate the amount of data analysed rather than characteristics of patients. It was therefore agreed that for quality assessment, participants were the nursing staff, and patient data constituted a dependent variable. This meant that studies which gave no data on staff, or in

which it was left to the reader to infer that all staff on the ward took part in the intervention, scored 'weak' on this component of the measure.

Ratings

Four studies achieved a global rating of 'strong', meaning no scores of 'weak' on any of the six quality components. Two of these studies used an uncontrolled before and after design (Abdalrahim et al., 2011; Hansson Fridlund & Hallström, 2006), the third study incorporated a control group into a before and after design (Mac Lellan, 2004) and the fourth was a controlled clinical trial (Zhang, Hsu Li, Wang, Huang, 2007). Five studies, incorporating a similar range of designs, had one 'weak' component rating meaning a global rating of 'moderate'. One of these studies scored 'weak' on blinding, in that outcome assessors and participants were aware of the study question (Hong & Lee, 2004). Three of these studies scored 'weak' for selection bias - in two of these studies, it could not be discerned how representative the nurses were of the population approached because a convenience sample was used and the proportion of nurses who agreed to take part was not reported (Lin, Chiang, Chiang & Chen, 2008; Michaels et al., 2007), and in the third study, less than 60% of the staff approached agreed to take part (Morisson et al., 2007).

The fifth study with a rating of 'moderate' had important confounding differences between the nursing staff in control and intervention groups regarding gender and type of surgery being undertaken on the wards (Ravaud et al., 2004). The remaining papers were rated as 'weak' on two quality components (Elshamy & Ramzy, 2011; Inness et al., 2004; Maunsaiyat et al., 2009) giving a 'weak' overall rating. These weaknesses were again in the areas of selection bias, confounders that were not controlled for, and neither data collectors nor participants being blind to the study question. The majority of studies scored 'strong' on validity of measures used due to

mention of previous validation, but doubts remained over the ecological validity of the measures for their use in the particular setting of the study under review.

The total duration of the data-gathering period was, in all studies, no more than twelve months. This was a relatively brief period in which to collect both pre and post intervention data, compared to several of the excluded observational studies (see appendix D), in which hospital-wide initiatives were introduced and measurements took place over a number of years. The longer the intervening period, the more scope there is for the influence of confounding factors, such as more general changes to hospital policy or staff turnover. There was thus less potential for the confounding influence of these factors in the studies reviewed compared to the excluded observational studies.

Main findings

Table 1 illustrates the design, participants, settings, methods of intervention, outcomes and main findings of the twelve reviewed studies. Studies took place across ten different countries with a range of different policies, protocols and guidelines on pain management informing the motivation for the studies and the content of the interventions. All studies took place on surgical wards, but in settings with a range of staffing levels. Eight studies reported the numbers of nurses who took part, which ranged from 18 nurses (Elshamy & Ramzy, 2011) on a small ward where all nursing staff were involved to 187 nurses (Hansson et al., 2007; Zhang et al., 2008) across all surgical wards on large university hospital sites. The median (n=73) and mean (n=87) number of participants differed due to the influence of a small subset of papers with substantially larger numbers of nurses taking part. Only one paper reported on gathering enough data to ensure sufficient power during analysis (Hong et al., 2014). This calculation showed that 123 data points were required to capture a moderate effect size, which indicates that some of the smaller papers investigating similar outcomes in the current review might have been

underpowered to capture any effect of a nursing intervention on changes in nursing practice.

The percentage of nurses approached who agreed to take part was between 80-100% in four papers (Abdalrahim et al., 2011; Innis et al., 2004; Ravaud et al. 2003; Zhang et al., 2008), 60-79% in two cases (Hansson et al., 2006; Hong & Lee, 2014), less than 60% in one study (Morrisson et al., 2006) and, in the remaining five papers, it was not reported. Further, four studies did not report the actual number of nursing staff who took part. Two of these four stated that all nursing staff who were eligible took part (Morisson et al. 2006; Ravaud et al., 2003) and in the other two studies it was left to the reader to infer that the intervention was available to all nurses, but the uptake was unclear (Mac Lellan, 2004; Michaels et al., 2007). Attrition over the reviewed studies was not an issue as all staff who initially agreed to take part stayed in the study throughout. The remaining results are presented according to the four research questions.

1. What types of nursing educational interventions have been implemented to improve pain management in hospital settings?

Duration of the intervention

As shown in table 1, studies varied in their duration, from 20 minutes (Michaels et al., 2007) to 15 hours (Lin et al., 2008) of teaching. One study explained that teaching sessions were held on different occasions so that all staff could attend (Ravaud et al., 2004). There was no mention in any studies of what principles informed the chosen duration. In some cases it was difficult to tell the exact duration or whether it was mandatory for staff on the wards to attend.

Table 1, Description of included studies

Table: Author(s) (year)	Design; time- scale	Participants; sample size, setting	Intervention	Outcomes; <u>findings</u>	Global Quality Rating
Abdalahim et al. (2011)	Quasi-experimental: Uncontrolled before and after study <i>Timescale</i> 3 month data collection (DC), 3 month intervention, 3 month DC	<i>Staff</i> 65 nurses <i>Patients</i> 120 <i>Setting</i> Two 100 bed, surgical wards, university hospital, Jordan	Postoperative pain management program and CD <i>Duration</i> 2 days <i>Delivered by</i> Research assistants	Audit of patient records: satisfactory documentation of pain as indicated by >3 on 0-5 for comprehensiveness (Ehnfors & Smedby, 1993); <u>Mean score 2.16 before, 3.26 after, 24% adequate before, 76.7% adequate after intervention.</u> <u>Change in mean score significant at $p<.05$</u>	Strong
Elshamy & Ramzy (2011)	Quasi-experimental Uncontrolled before and after study <i>Timescale</i> 2 months DC, intervention, 2 months DC	<i>Staff</i> 18 nurses <i>Patients</i> Pre=post= 42 <i>Setting</i> General surgical wards, university hospital, Egypt	Postoperative Pain Assessment and Management Program and booklet <i>Duration</i> Three sessions, length not specified, each of 5-7 nurses, over 2 weeks <i>Delivered by</i> Researchers	Three checks on documentation: Audit of patient records using Pain and Anxiety Audit Tool (PAAT) developed by Manias (2003); <u>Total documentation 14.6% before 53.8% after, significant improvement ($p<.05$);</u> Adherence to use of specified scale (NRS) for assessment; <u>Over 2 points difference between researchers and nursing on NRS before, less than 1 point after intervention.</u> <u>Significant improvement ($p<.05$)</u>	Weak

				<p>Comprehensiveness of nursing records instrument (Ehnfors & Smedby, 1993); <u>Mean score of 0.7 before, 2.1 after intervention, significant improvement ($p < .05$)</u></p> <p>Nurses' communication with patients and their satisfaction, questionnaire (De Rond, de Wit, Van Dam and Muller, 2000), percentage score of number of patients satisfied before and after intervention <u>Significant improvements on information received (11.9% vs 57.1%) and satisfaction (7.1% vs 54.8%) ($p < .05$).</u> <u>No significant difference in timeliness of medication (69% vs 76.2%) or discussing pain with nurses (26.2% vs 30.9%) (no p-values reported).</u></p>	
Hansson Fridlund & Hallström (2006)	<p>Quasi-experimental Uncontrolled before and after study</p> <p><i>Timescale</i> 2 month DC, 6 month intervention, 2 month DC</p>	<p><i>Staff</i> Pre 101 nurses 17 physicians Post 86 nurses 16 physicians</p> <p><i>Patient</i> Pre=234 Post=181</p> <p><i>Setting</i> 5 acute medical and surgical wards, 1</p>	<p>Quality improvement program including development of policy, education and web-based support site</p> <p><i>Duration</i> 8 days over 6 months</p> <p><i>Delivered by</i> Researchers, based on manual developed by pain experts. Nurses, in turn,</p>	<p>Patient pain questionnaire, assessing patients' experience of pain, interference with function, pain treatment, communication, and pain at rest and movement; <u>No significant differences in patients' experience of pain management use of non-pharmacological methods or interference with function</u> <u>Significant increase in nursing assessment of pain at rest and movement ($p < .001$, percentage change not specified)</u></p>	Strong

		emergency department, university hospital, Sweden	trained to deliver future teaching across the hospital		
Hong & Lee (2014)	Quasi-experimental interrupted time series design, post-test only control group design <i>Timescale</i> 1 month DC; 3 week intervention, 1 month DC	<i>Staff</i> 27 nurses <i>Patients</i> 124 <i>Setting</i> Abdominal surgical wards, tertiary hospital, South Korea	Web-based, evidence based guideline and educational session <i>Duration</i> Five 80 minute teaching sessions <i>Delivered by</i> Research team	Postoperative pain level 0-10 measured by nurse at different time points after surgery; <u>Significant differences when control group compared to intervention group 1 (1 -14 days after surgery), and intervention group 2 (15-28 days after surgery) at:</u> <u>1 hour after surgery (8.3 vs 7.4 vs 6.44, $p = .007$), 6 hours after surgery (7.4 vs 6.3 vs 6.1, $p < .001$), 12 hours after surgery (6.79 vs 6.28 vs 5.61, $p = .001$);</u> <u>18 hours after surgery (6.49 vs 6.19 vs 5.02, $p < .001$);</u> <u>24 hours (6.08 vs 5.77 vs 4.80 $p = .001$)</u>	Moderate
Innis et al. (2004)	Quasi experimental Uncontrolled before and after study <i>Timescale</i> 1 month DC, 1 month intervention, 1 month DC	<i>Staff</i> 93 nurses <i>Patients</i> Pre= 50 Post= 50 <i>Setting</i> 74 bed general medical ward, teaching hospital, Canada	Pain education session, personal cards to carry, posters on wards <i>Duration</i> 1 hour <i>Delivered by</i> Member of the pain service	Audit of patient records for evidence of nursing documentation of pain assessment; <u>Significant increase after intervention in percentage of assessments recorded (52% vs 100%, $p < .001$)</u> Patient report of Pain (0-10); <u>No significant changes (3.36 vs 3.44, p-value not reported)</u> Patient satisfaction with how well way pain was managed; <u>Significant increase after intervention in number of patients satisfied with the way their pain was controlled (62% vs 82, $p=.046$)</u>	Weak

Lin, Chiang, Chiang & Chen (2008)	Controlled clinical trial <i>Timescale</i> Baseline, two week intervention, DC after one week	<i>Staff</i> 42 nurses in study group, 39 nurses in control group <i>Patient</i> 40 interviews with study group patients <i>Setting</i> Seven surgical wards, medical centre, Taiwan	Education programme specifically on delivering relaxation therapy <i>Duration</i> seven units, 15 hours of instruction <i>Delivered by</i> Four experts, including an anaesthesiologist and clinical nursing specialists in pain management	Application of a relaxation therapy course to patients on 0-3 scale (0=never, 3=always); <u>Significantly greater application of behaviour relaxation after in intervention group compared to control group (2.24 vs 1.53, $p = .049$)</u> Qualitative feedback from patient interviews	Moderate
Mac Lellan (2004)	Quasi-Experimental controlled before and after study <i>Timescale</i> 8 months DC, intervention/control, 8 months DC	<i>Staff</i> Not specified <i>Patients</i> <i>Pre</i> Intervention= control=200 <i>Post</i> Intervention= control=200 <i>Setting</i>	Pain education programme: lectures, poster displays at study days and a hospital-wide pain conference <i>Duration</i> Two afternoons of interactive pain lectures and on-ward practical skills	Pain scores, using visual analogue scale, (Seymour et al., 1985) aggregated for the three 24-hour periods days 1, 2 and 3, respectively; <u>Significant reductions in mean pain scores on each day post-surgery in the magnitude of 7.3% (.73cm) for the intervention hospital ($p<.00$), No significant differences in the control hospital</u>	Strong

		Two teaching hospitals, Ireland	demonstrations over six-months <i>Delivered by</i> Not specified, endorsed by nursing managers and multi-disciplinary team		
Maunsaiyat, Akayipat & Phonsayom (2009)	Quasi-experimental uncontrolled before and after study <i>Timescale</i> baseline, intervention, DC at 6 months	<i>Staff</i> 35 nurses <i>Patients</i> Not specified <i>Setting</i> 7 neurological wards, and 2 intensive care units, Thailand	Education program and CD summarising main topics <i>Duration</i> 6 hours <i>Delivered by</i> Senior anaesthetist	Nursing practice score taken from a pain-audit checklist (documentation of pain assessments, description of pain and use of resources, validated by anaesthetist); <u>Significant improvement in percentage coverage of areas to be documented at 6 months compared to baseline (32.2% vs 20% p<0.001).</u>	Weak
Michaels, Hubbart, Carroll & Hudson-Barr (2007)	Quasi-experimental controlled before and after study <i>Timescale</i> baseline, intervention, DC at 1 month, DC at 6 months after	<i>Staff</i> Not specified <i>Patients</i> 911 <i>Setting</i> 16 medical/ surgical units, Southeastern United States	Educational session <i>Duration</i> 20- to 30-minute educational session <i>Delivered by</i> Clinical Nurse specialist group	Percentage of patients with appropriate overall pain assessment documentation per shift; <u>No significant differences (43% vs 52%, no p-values reported)</u> Percentage of patients satisfied when asked "was pain treated promptly?" <u>No significant differences between control and intervention group (91% vs 97%, no p-values reported)</u>	Moderate
Morrison et al. (2007)	Quasi-Experimental	<i>Staff</i> Not specified	Phased trial of education, audit and feedback, enhanced	Rates of pain assessments;	Moderate

	Controlled before and after study	<i>Patients</i> Control=1994 Intervention=1970	pain scale use and a computerised decision-support system	<u>Significant increase where enhanced pain scale was used compared to 1 item pain scales (64% vs 32%, $p<.01$).</u> <u>Significant increases in audit and feedback units compared with units in which audit and feedback was not used (85% vs 64%, $p<.001$).</u> <u>Significant increases in computerised decision- support units only when compared with units without audit and feedback (79% vs 64%, $p<.001$).</u>	
	<i>Timescale</i> 0-4 months phase 1, 5-11 phase 2, 12-19 phase 3, 20-25 phase 4	<i>Setting</i> Nine medical/surgical wards in 1171-bed hospital. United States	<i>Duration</i> Various intervention components, over extended period, not precisely specified	<i>Delivered by</i> researchers	WHO Sanctioned analgesic prescribing; <u>Significant increases in prescribing for patients with moderate or severe pain when enhanced pain scale used compared with the 1-item scale (83% vs 66%, $p=.01$).</u> VAS Pain score; <u>No significant changes after any interventions</u>
Ravaud et al. (2004)	Controlled clinical trial	<i>Staff</i> All nursing staff, not specified	Education programme with individualised feedback	Documentation of pain intensity measurement using VAS; <u>Significant effect of intervention on number of patients with documentation before and after intervention (.7% vs 80.7%, $p<.001$).</u> <u>No significant differences in control group (2.6% vs 1.1%).</u> VAS Pain score; <u>No significant differences</u>	Moderate
	<i>Timescale</i> 3-month observational study (period 1). 3-month period of intervention (period 2), over 12 months total	<i>Patients</i> <i>Intervention</i> Phase 1= 567 Phase 2 =543 <i>Control</i> Phase 1 =538 Phase 2 =630 <i>Setting</i>	<i>Duration</i> 1 hour meeting repeated six times in each ward to allow all nurses to participate. <i>Delivered by</i> An anaesthetist, who was an expert in pain		

		Surgical ward, tertiary care hospital. France	management, and a chief nurse.		
Zhang, Hsu Li, Wang, Huang (2007)	Controlled clinical trial <i>Timescale</i> DC(time 1), intervention, 1 month follow-up (time 2), 3 month follow up (time 3)	<i>Staff</i> control group ($n = 82$) experimental group ($n = 105$) <i>Patients</i> 254 patient records from experimental hospital Control hospital gave no permission <i>Setting</i> Five medical/surgical wards, two teaching hospitals, China	Education Program and pocket pain assessment guide <i>Duration</i> Two 3hr sessions <i>Delivered by</i> Nucleus of faculty instructed nurses, oncologists and anaesthetists who developed program via literature review with the researcher	Number of nurses correctly using Changhai Pain Scale to measure patients' pain; <u>Significantly greater use of scale in intervention group vs control group at:</u> <u>Time 2, used $n=57$, did not use $n=46$ vs used $n=16$, did not use $n=64$ ($p<.000$)</u> <u>Time 3, used $n=105$, did not use $n=1$ vs used $n=32$, did not use $n= 58$ ($p<.000$)</u>	Strong

DC: data collection, VAS: visual analogue scale, NRS: numeric rating scale

Provider of the intervention

Six studies (Innis et al., 2004; Lin et al., 2008; Maunsaiyat et al., 2009; Michaels et al., 2007; Ravaud et al., 2004; Zhang et al., 2007) were delivered by 'experts' in pain management affiliated to the hospital, such as pain team members, anaesthetists, or specialist nurses. Five interventions were carried out by the researchers (Abdallah et al., 2011; Elshamy & Ramzy, 2011; Hansson et al., 2006; Hong & Lee, 2014; Morrison et al., 2007) and one study (Mac Lellan, 2004) made no reference to who delivered the intervention but specified its endorsement by senior hospital staff.

Teaching methods

As shown in table 2, all studies included a didactic teaching component, often focusing on current best practice guidelines and misconceptions about pain, as well as practical skills training. This skills training was in the use of an assessment tool in all but one study (Lin et al., 2006), which gave teaching on the application of relaxation therapy. Ten studies also mentioned interactive teaching. All but two papers (Innis et al., 2004; Ravaud et al., 2004) included small group discussions, where questions from nursing staff were encouraged. Five papers (Abdallah et al., 2011; Hansson et al., 2006; Lin et al., 2008; Michaels et al., 2007; Zhang et al., 2007) also used role-plays and vignettes. This involved a case vignette or presentation of clinical material for nurses to discuss.

Four studies (Lin et al. 2008; Mac Lellan, 2004; Michaels et al., 2007; Ravaud et al., 2004) provided no on-going support, whereas the remainder provided either a CD (Abdallah et al., 2011; Maunsaiyat et al., 2009), a booklet for nurses to carry with them (Elshamy & Ramzy, 2011; Innis et al., 2004; Zhang et al., 2007), web-support (Morrison et al., 2007; Hansson et al. 2006; Hong & Lee, 2014), or the availability of the researcher or pain experts on the ward or on call for a short duration after the intervention (Abdallah et al., 2011; Elshamy & Ramzy, 2011).

All but three studies (Lin et al., 2008; Mac Lellan, 2004; Zhang et al., 2007) provided some form of feedback to nurses. This came in the form of a test after the intervention to ensure learning or individualised feedback on pain assessment performance. In one paper, this feedback was given with a cover letter signed by the nursing director (Ravaud et al., 2004), presumably with the aim of emphasising the importance of the outcome and potentially negative consequences for nursing staff with poor performance.

2. Do nursing educational interventions to improve pain management yield positive clinical outcomes?

The main aim of the majority of papers was to improve clinical indicators of changes in nursing practice via measuring nursing documentation and the use of pain assessment tools before and after an intervention. All except four studies (Hansson et al., 2006; Hong & Lee, 2014; Lin et al., 2008; Mac Lellan, 2004) investigated nursing documentation of pain assessment as the main clinical outcome. Of the remaining studies, one used patient satisfaction with pain management (Hansson et al., 2006) as the main outcome, two included pain scores as the key measure (Hong & Lee, 2014; Mac Lellan, 2004) and one study measured changes in nurses' delivery of a relaxation intervention for pain (Lin et al., 2008).

Nursing pain assessments

All but one (Michaels et al., 2007) of the eight papers that measured nursing assessment reported significant improvement after intervention in the frequency of appropriate documentation.

Of the seven papers that found improvements, three included control groups – other wards or hospital sites where the intervention was not run - in which there were no improvements in frequency of documentations (Morrison et al., 2007;

Ravaud et al., 2004; Zhang et al., 2007). Three studies, as well as assessing rates of nursing pain assessment, also found improvements in the comprehensiveness of nursing assessments, using composite measures that rated items such as description of symptoms, communication with patients, and descriptions of pain management methods or resources used (Abdalrahim et al., 2011; Elshamy & Ramzy, 2011; Maunsaiyat et al., 2009). Two of these papers (Abdalrahim et al., 2011; Elshamy & Ramzy, 2011) used a previously validated measure of comprehensiveness of nursing documentation (Ehnfors & Smedby, 1993). Maunsaiyat and colleagues (2009) measured similar components of documentation but the scoring was instead validated by an anaesthetist.

Patient self-report of pain

Patient self-report of pain is a key hospital outcome measure. Firstly, taking patient report is a more reliable indicator of pain than subjective judgement. Secondly, it has been reported extensively in the literature and is known to relate to rate of recovery, cost, and post-surgical complications. Five studies included patient self-report of pain score, recorded on an analogue scale, as an outcome. Two of these studies found significant improvements in pain on each of the several days after surgery in the intervention group but not in the control group (Hong & Lee, 2014; Mac Lellan, 2004). Three studies found no change in pain scores after the nursing educational intervention (Innis et al., 2004; Morrison et al., 2007; Ravaud et al., 2004). It should be noted that only three studies (Hong & Lee, 2014; Mac Lellan, 2004; Morrison et al., 2007) explicitly aimed to improve pain scores as a main measure, and the remainder investigated nursing documentation or proper use of the pain assessment tool assessment as the main outcome.

Patient satisfaction with pain management

Patient satisfaction is an important indicator of nursing behaviour-change in relation to pain management. Hansson and colleagues (2006) provided an intervention for nurses and clinicians using a patient satisfaction questionnaire as the main outcome measure. They found significant improvements when asking specifically about nursing pain measurement at rest and movement, but no improvements in overall patient satisfaction with the way pain was managed. Three other studies also included quantitative patient satisfaction data. Two of these studies found significant improvements in patient satisfaction with communication or experience of pain management after the educational intervention (Elshamy & Ramzy, 2011; Innis et al., 2004) and one study reported no significant changes (Michaels et al., 2007).

Nursing provision of treatment for pain

Lin and colleagues (2008) found that nurses were significantly more likely to offer relaxation therapy to patients after they had been trained to deliver the intervention, though this was based on nurse self-report rather than an audit of patient records. The authors chose this intervention because of research demonstrating decreases in pre-operative anxiety and increased speed of recovery following relaxation therapy, and because it is a non-pharmacological intervention that trained nurses can deliver free from physician orders or medication protocols.

Table 2, Teaching methods used in reviewed papers

	Abdalrahim et al. (2011)	Elshamy & Ramzy (2011)	Hansso n et al. (2006)	Hong & Lee (2014)	Innis et al. (2004)	Lin et al. (2008)	Mac Lellan (2004)	Maunsaiyat et al. (2009)	Michaels et al. (2007)	Morrison et al. (2007)	Ravaud et al. (2004)	Zhang et al. (2007)
Didactic/lecture- based	•	•	•	•	•	•	•	•	•	•	•	•
Practical skills training e.g. on use of new scale	•	•	•	•	•	•	•	•	•	•	•	•
Group discussion	•	•	•	•		•	•	•	•	•		•
Role play/vignette	•		•			•			•			•
Feedback/test	•	•	•	•	•			•	•	•	•	
Extra or on- going support	•	•	•	•	•			•		•		•

3. Is there a relationship between the type of pain management intervention and the clinical outcome?

Given the non-equivalence of outcomes and small scale of most studies, only a descriptive comparison could be made here. One paper (Michaels et al., 2007) stood out as having both a noticeably shorter education session (20-30 minutes) than the other studies and no significant changes on outcomes. Of the four studies that measured patient satisfaction, all apart from Michaels and colleagues (2007) provided on-going support. In the studies that found improvement in patients satisfaction (Elshamy & Ramzy, 2011; Innis et al., 2004), staff were given a booklet or prompt to carry with them. Hanson and colleagues (2006) provided a website that could be accessed by staff, but it is unclear how feasible this would be during nursing shifts and reports of usage were not provided. Thus, only the two studies that provided support that nurses could carry with them found improvements in patient satisfaction. However, given the low number of studies no strong conclusions on the role of support can be made.

Pain scores would not necessarily be expected to decrease after education and training in the use of pain assessment tools. Indeed, it could be expected that scores would increase as assessment becomes more thorough and frequent. Two papers made clear the aim of the intervention was to improve assessment, documentation and the issuing of analgesia rather than pain scores (Elshamy & Ramzy, 2011; Ravaud et al., 2004), whereas two papers explicitly aimed to improve pain scores (Mac Lellan, 2004; Morisson et al., 2007). One of these papers provided the rationale that empowering nurses could improve pain management based on previous literature (Mac Lellan, 2004) and the other used a series of interventions including decision-support and enhanced pain ratings that have previously been found to improve pain scores (Morisson et al., 2007). No substantial differences in design or methods of intervention could be discerned between studies that reported

improvements in pain scores (Elshamy & Ramzy, 2011; Mac Lellan, 2004) and those that found no changes (Morrison et al., 2007; Ravaud et al., 2004).

4. Do the methods used in the educational interventions map onto existing behaviour-change domains?

Table 3 illustrates twelve domains pertinent to behaviour-change in healthcare settings as distilled by Michie and colleagues (2005) (see appendix E for full details). Several of the papers in the current review mentioned an examination of literature that informed the content of their interventions. This involved ensuring the most up to date guidance on pain was followed and included an emphasis on addressing nurses' misconceptions about pain. Studies also cited positive findings in previous research when similar teaching methods to those they intended to use were implemented. Some studies also included an expert consultation before the teaching content was agreed. However, no papers referred to any theories of behaviour-change that informed the methods of teaching used in the interventions.

Table 3, Theoretical domains involved in healthcare behaviour-change, from Michie et al. (2005)

	Domain
1	Knowledge
2	Skills
3	Professional role identity
4	Beliefs about capabilities
5	Beliefs about consequences
6	Motivation and goals
7	Memory, attention and decision-making
8	Environmental resources
9	Social influences
10	Emotion
11	Behavioural Regulation
12	Nature of the Behaviours

The majority of studies aimed to change nursing healthcare behaviours in relation to pain assessment either by increasing appropriate use of a tool, improving

quality of documentation or altering approaches to pain management using a range of available resources. Despite no explicit reference to behaviour-change theory, the methods used in the reviewed studies, as shown in table 2, did map on to many of the domains outlined in table 3. Though different teaching methods included elements that mapped onto the same domains, coverage of the majority of behaviour-change domains required multiple methods. This suggests that studies that use a range of teaching methods are likely to more comprehensively address a wider range of constructs involved in behaviour-change. Appendix E contains details of the constructs comprising each domain. Reference, below, to a particular domain in table 3, is signified by the corresponding number in brackets.

Didactic lecture/Practical skills training/Group discussion

All papers reviewed included a lecture-based or didactic teaching component as well as practical skills training, usually on the use of an approved pain assessment tool. These teaching methods partially map onto the domains of knowledge (1) and skills (2), which include the requirement that healthcare professionals need to be aware of the rationale behind the healthcare intervention (1) but also to possess the procedural and practical skills to carry out the behaviour in clinical practice (2). Lecture-based teaching alone provides little opportunity to ensure that knowledge has been learned (1). Studies that also included a group discussion provided an environment in which questions could be asked so that learning was more likely to occur (1). Practical skills training provided the opportunity to acquire the procedural knowledge (2) required to, in the case of most studies reviewed presently, undertake and document an appropriate pain assessment.

The content of the majority of the educational interventions, as well as training on a specific tool also included common misconceptions about pain and pain assessment. Addressing nursing misconceptions about pain, for example, nurses' tendency to under-assess pain or rely on observable indicators over patient self-

report might go some of the way to ensuring nurses realise the importance of assessing pain (5), thus improving motivation to regularly assess patients using appropriate pain rating scales (6), but without more interactive teaching methods it is difficult to know whether the content of teaching was reflected on by nurses in this way. These methods of teaching alone failed to address the majority of behaviour-change domains.

Role play/vignette

Several studies also included role-plays and vignettes, which map onto several other behaviour-change domains. These teaching methods, by replicating the environment in which pain assessments take place in hospital settings, address the ways in which nurses' emotions – specifically the perception of threat – could affect the acquisition or application of learning (10). This is particularly important in the area of pain management, where assessing a patient in pain frequently evokes an emotional response from nurses that is likely to be entirely absent during lecture-based learning. In vivo demonstrations of pain management procedures also provide the opportunity to examine changes in attention, memory, and decision-making (7) that more closely simulate the environment in which nurses make assessment and treatment decisions. These methods also provide the opportunity for behaviours to be broken down into component parts (11) and to explore what could be barriers (11) to, for example, optimal use of a new pain assessment tool on a surgical ward. Finally, they provide the opportunity to examine through practice whether old habits, such as previous pain assessment methods or misconceptions about pain, interfere with the application of new learning (12). Thus the addition of these interactive teaching techniques addresses a substantially greater number of behaviour-change domains.

Feedback/test

Several papers included some form of test or feedback on learning. These methods relate to domains on motivation and goals (6), as well as beliefs about capabilities (4) and consequences (5), particularly if nurses believed their performance was monitored and could have an effect on their employment. Studies that provided feedback from more senior staff members utilised the social pressures of the medical hierarchy operating in hospital settings (9), where nursing motivation to improve pain management practice can originate from a desire to avoid threats to employment and to follow protocols set by senior members of staff (6, 9). However, this may not be a straightforward relationship. Little is known from the studies reviewed about motivational factors that went beyond an external pressure to perform well. For example, little emphasis was given in the studies to nursing role or identity (3), how much of a priority pain management was for nurses (6) and other more intrinsic motivating factors.

Extra or on-going support

The on-going support in learning new assessment skills provided for nurses in several studies also maps on to several of behaviour-change domains. The presence of support can facilitate continuing motivation (6) and helps regulate emotion (10) by addressing unexpected concerns that can arise as nurses put learning into practice. Support in the form of the availability of a researcher or nurse specialist also provides a resource to talk through decision-making (7). Some studies provided web-based or pocket guide support to aid memory (7) and assist with breaking down pain management behaviours into smaller stages (11). It is not known if this support replicates the resources available to nurses in everyday practice (8). Where on-going support was provided only for the duration of data gathering – such as when support came from the researchers – the impact of removing of this support after the completion of the study on on-going nursing

motivation (6) perceived self-efficacy (4), decision-making capabilities (7) and emotion regulation (10) is not known.

Discussion

The aim of this study was to review nursing educational interventions for pain management in acute hospital settings, with emphasis on clinical outcomes and the teaching methods used, while drawing comparisons between these methods and domains theorised to be involved in healthcare behaviour-change.

The majority of studies used a range of didactic and more interactive teaching methods that mapped onto many of the domains involved in behaviour-change theory as distilled by Michie and colleagues (2005), despite no reference to such theory in the design of the interventions. The role plays, vignettes, feedback on performance, group discussions and ongoing support included in many studies are methods previously shown to facilitate behaviour-change in healthcare settings (Fosetlund et al., 2009; Twycross, 2002).

However, previous research also highlights the importance of contextual factors in learning and of involving nurses in designing the interventions to ensure outcomes are important to them. These factors relate to the importance of instilling a strong intention or motivation in order to facilitate behaviour-change (Fishbein et al., 2001; Michie et al., 2005). Similarly, positive effects on healthcare outcomes have been demonstrated when nurses feel autonomous (Brown & McCormack, 2011) and involved in decision-making (Chan, 2013; Dihle et al., 2006). An examination of this more intrinsic motivation for nurses stemming from an involvement not only in the education intervention but its design and the behaviours being targeted was largely absent in the reviewed studies.

There was little emphasis in the methods and design of the nursing interventions how nurses' professional identity or personal interest in helping manage patients in pain could be motivating factors to improve practice. Many

studies in the current review included background literature that described nurses as central to pain management, citing research demonstrating the importance of empowering nurses to be more involved, but it was not clear whether this intention made its way to the delivery of the interventions. By including teaching content on misconceptions about pain, several studies aimed to increase the perceived importance for nurses of assessing pain with scales that facilitated patient report over subjective judgement (McCafferty & Ferrell, 1999). However, It is difficult to ascertain from the studies what nurses thought of the experience of assessing pain, how much of a priority pain assessments were for nurses or whether there was a sense that nurses felt a sense of ownership of clinical outcomes that had been specified a priori.

In the absence of this, the studies instead appeared to implicitly rely on the presumed motivation for nurses arising from strong social norms in a medical hierarchy and the external pressures to assess pain in accordance with hospital protocol (Wensing et al., 1998; Michie et al., 2005). Top-down policies or protocol changes based on audits, new guidelines or data showing suboptimal performance were the starting point for most studies. It can be argued that the pressure to perform based on these external factors; for example, providing feedback with a signed letter from the hospital director on assessment performance (Ravaud et al., 2004) also included a punitive element that would have the opposite effect to empowering nurses.

One potential route between these external motivations to change behaviour and more intrinsic motivation related to personal interest or professional role is via the involvement of specialist nurses – for example, members of a specialist pain team - in the design and teaching of studies, which took place in several of the reviewed studies. These experts would lend credibility to the teaching but might also be perceived by nurses as role models, who, through their own commitment to the

intervention and outcomes, could convey to nurses that pain management forms a central part of their professional role (Michie et al., 2005; Michie et al., 2008).

A second route to increasing intrinsic motivation is via an approach similar to the aim described in one of the reviewed studies: to facilitate nursing autonomy by training nurses in the use of a non-pharmacological resource that could be delivered free from physicians' orders (Lin et al., 2008). The authors hypothesised that teaching a relaxation intervention would allow nurses to deliver more integrated care, thus speaking to their professional role as a motivating factor for behaviour-change. This approach is also in keeping with previous research on empowerment and involvement of nurses in decision-making (Brown & McCormack, 2011; Chan, 2014; Dihle et al., 2006).

There was also little focus in the reviewed studies on nurses' real-time experience of assessing and managing patients in distress. The role plays and vignettes used in some studies simulated this experience to some extent, but perhaps fell short of capturing what it is like for nurses to assess pain alongside a range of simultaneous challenges during their shift. The work of nurses in hospitals has been characterised as involving shifts in attention, multi-tasking, ad hoc changes to priorities and interruptions (Bragadóttir, Gunnarsdóttir, Ingason, 2014). Further, nurses have been described as "gatekeepers"; for their own attention, for controlled medication and for patients' time in hospital. This role, when coupled with limited resources, can push nurses towards discounting pain or using cues to do with the person (age, sex, social class, ethnicity) rather than their subjective report of pain (Williams, 2002). These powerful contextual and relational factors have an important impact on pain management behaviours that are difficult to examine solely via teaching misconceptions about pain or training nurses on pain assessment measures.

The relatively sterile aim of training nurses on a known pain assessment tool, as was the case in the majority of reviewed studies, also failed to capture the emotive

nature of pain assessment when it is viewed as an exchange between clinician and patient. Parallels can be drawn here to research into medical training that advocates the importance of practicing on real cadavers rather than simulations, so as to properly prepare medical students for the emotional challenges of dissection (Helman, 1991; Lempp, 2005). A similar pull between distancing from the act and engaging in it arises during the assessment of pain. One way of minimising the aversive emotional effects of others' pain is to deny it, or avoid the person (Menzies Lyth, 1960). There are important benefits in distancing from the emotional impact of assessing pain, in terms of nurses being able to complete all other requirements of the nursing role (Watt-Watson, 1997). However it has been found that such distance can also lead to distortion in assessment (Poissant, Pereira, Tamblyn, & Kawasumi, 2005).

These complexities in pain assessment have important impacts for the reliability and validity of the common pain assessment measures, such as the VAS and NRS, used in many of the reviewed studies. Many of these studies stated that the measures used had been previously found to be valid and reliable. However common checks on validity and reliability are problematic when applied to such a private and context-dependent experience as pain (Holmberg, Karner, Rappenecker & Witt, 2014). The VAS in particular is problematic for elderly patients or those with impairments in communication (Williamson & Hoggart, 2005). The clinical impact on patients of nurses improving in their use of these assessment tools is not straightforward. For example, a qualitative study of a subset of participants in a wider RCT found that elderly patients understood the importance of completing pain measures, so used strategies to aid completion that meant information was often ambiguous or missing (Holmberg et al., 2014). Even with measures considered as "gold standard" such as the VAS, it is difficult to know exactly the meaning of the information being conveyed (Broderick, Stone, Calvanese, Schwartz & Turk, 2006). Looking beyond the 'gold standard', it has been argued that pain – now, the fifth vital

sign - is a relational phenomenon that cannot be adequately captured in the same way as the other four vital signs (temperature, blood pressure, pulse and breathing rate) because it is a communication between patient and clinician in a way that these other bodily measurements are not (Schiavenato & Craig 2011).

Training nurses on how to use a pain scale is thus not the same as training them on how to assess pain. These complex issues relating to the potentially taxing personal cost of pain assessment give some indication of why nurses might rely on subjective judgement over engaging more with patients (McCaffery & Pasero, 1999) – the latter, without proper preparation or support can be overwhelming. Examining some of these potential reasons for nurses' reliance on subjective judgement over recommended patient report, as well as reasons for other nursing barriers to pain management, could provide a helpful insight when designing future nursing pain management interventions.

Several studies in the current review investigated changes in patient self-report of pain following an intervention to improve nursing assessment. It was unclear how improvements in nursing pain assessment might lead to reductions in patients' report of pain. One insight comes from several of the studies excluded from the current review. Many of these studies included training on a pain assessment tool alongside changes to medication protocol. This suggests that assessing pain was linked with the aim of reducing subsequent reports of pain via pharmacological intervention.

This aim does not take into account the relational or contextual factors above, or the idea that good nursing assessment in itself can be therapeutic. In the current review, in studies that included a measure of the thoroughness of nursing documentation and of patient satisfaction there was substantial overlap across the two outcomes. The two studies which demonstrated improvements in comprehensiveness of nursing documentation – indicated by adequate recording of the patient's problem, planned interventions, nurse outcome, and steps comprising

nursing process (Ehnfors & Smedby, 1993) - also found improvements in patients' satisfaction with pain management, and the one study that found no improvements in the former also found no improvements in the latter. It can be hypothesised - albeit tentatively due to the low number of studies - that patients appreciated thorough assessment in itself, not necessarily for the ensuing pharmacological intervention. Considering the relational and emotive nature of pain assessment, there might be a benefit gained from a greater consideration of nurses' more traditional role of 'caretakers of suffering' (Morse et al., 1994) and what an assessment that acknowledged this would look like.

Despite positive findings in the majority of reviewed studies, mainly relating to improvements in nursing documentation and assessment after educational interventions, it was difficult to examine the relationships between the teaching methods used and improvements in clinical outcomes. This was because of the lack of reference to underlying pedagogical or behaviour-change theories, the varying quality of studies, and the non-equivalence of outcomes. The ratio of studies that found clinical improvements after a nursing education intervention to studies that found no clinical improvements in the current review is similar to two previous reviews (Gunnarsdóttir & Gretarsdottir, 2011; Twycross, 2002). These similarities without substantial progress suggest that not enough of the specifics of the experience of pain management, with its emotional, contextual and interpersonal factors are being considered when designing nursing interventions.

Limitations

Papers in which nursing education was part of a wider initiative or where different staff groups were targeted as well as nurses were excluded from the current review. This was done for the sake of examining nursing interventions specifically. However, many of the excluded papers might be more representative of the way in which interventions are implemented in everyday clinical settings.

Studies included in the current review were drawn from a range of countries. While this provides an impression of nursing interventions across a broad range of settings, a more in depth study of acute pain settings in the UK alone, for example, perhaps with broader inclusion criteria for the style of intervention, would have provided a more in depth examination of the state of nursing pain management in a single country, with a single set of pain management legislation.

The component on the EPHPP which rates quality and appropriateness of analyses was dropped from the global rating due to low inter-rater reliability in previous research. However, more emphasis on the analyses used in the reviewed studies, might have allowed for a helpful discussion on the validity of the findings and an examination of their comparability across studies.

Some studies included qualitative data that was not extracted. Though this was beyond the scope of the current review, qualitative data on patients' experience of pain management might have added value to the results. Further, with greater resources, a broader search of a wider number databases would have been possible. The study was limited by researcher resource in this respect.

Recommendations for future research

- Explicit reference to the ways in which theory on behaviour-change can be used to inform the design of educational interventions for nurses. This could be woven in at the design stage with nursing input as well as by considering the questions accompanying constructs involved in healthcare behaviour-change (Appendix E). Studies designed with this in mind can begin to more robustly explore what 'active ingredients' in nursing education lead to clinical changes.
- More emphasis in the design of pain management interventions on nurses' professional identity, motivation and the perceived importance of the healthcare behaviour being targeted.

- A clearer understanding of the path by which nursing education changes nursing behaviours and how this, in turn, affects clinical outcomes. Given the lack of theory in the currently reviewed studies, predictions might be initially made on nursing outcomes, for example measures of motivation, perceived locus of control, intrinsic motivation, the importance of the outcome measure or the emotional load; and how these might relate or predict whether nurses engage with or utilise new learning in relation to pain management.
- Further investigation into nurses' experience of managing pain, the limits of education alone, and the possible reasons behind some of the existing nursing barriers to optimal pain management. This would include perhaps a more extended examination of the role of emotion than given in Michie and colleagues (2005), which, though thorough, lacks a relational component that is integral to pain assessment.

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Part 2: Empirical Paper

Barriers and potential solutions to effective pain management on a gastro-intestinal ward: an action research study in a university hospital

Abstract

Background: Research has shown barriers to optimal pain management at the level of staff and institutions. A recent patient survey at the hospital in the current study found suboptimal satisfaction with the management of pain, particularly on gastrointestinal (GI) wards.

Aims: To investigate the processes involved in pain management on a GI ward and explore the barriers identified by these initial investigations with staff in a reflective setting in order to implement improvements in pain management.

Methods: The study took place in a university hospital on a 60 bed GI ward, comprising pre-surgical, post-surgical and non-surgical patients. An action research methodology was used. Clinical staff were involved in a consultation phase, an ethnographic phase and a feedback phase.

Results: Interview and observational data yielded themes in four main areas pertinent to pain management: 1, barriers; 2, staff-patient interactions; 3, resources; and 4, decision-making processes. These themes were reflected on with staff in the feedback phase, which facilitated the generation of solutions to pain management difficulties, including a Chronic Pain Passport and Wellbeing Checklist.

Conclusions: Solutions to pain management arose when GI patients' pain was thought about as separate from, but related to, their distress. This opened up space to focus on how existing nursing resources could be used to target contributing factors to patients' distress that went beyond the physical experience of pain. These factors included beliefs and worries about pain, and the disempowering experience of being in hospital. However, focussing solely on bolstering nursing resources can mean that broader, systemic barriers to pain management are ignored, and the generation of checklists and protocols for pain management can facilitate a dissociation from the reality of confronting distress.

Introduction

Pain is defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage” (International Association for the Study of Pain (IASP), 1986). Poor pain management produces adverse consequences for physical and psychological wellbeing (Mackintosh et al., 2007), including prolonged hospital stays (Royal College of Anaesthetists, 2014; White et al., 2007) and increased costs (Messelink, Baranowski, & Hughes, 2015; Sinatra, 2010). Therefore, along with temperature, blood pressure, respiration and pulse, it is identified in inpatients in the UK as a vital sign to be assessed routinely (Royal College of Surgeons, 1990). However, despite an increase in specialist pain services (Gordon, Pellino, Enloe, & Foley, 2000; Kaasalainen et al., 2014), pain management remains suboptimal across hospital settings and patients have reported dissatisfaction with the management of their pain (McDonnell, Nicholl & Read, 2003). This is the case for the hospital in the current study, where unlike in all other areas of patient satisfaction, pain management was reported as suboptimal by a substantial proportion of patients (15%) in a hospital-wide patient survey (University College London Hospital (UCLH), 2013). This survey highlighted areas for improvements in the management of chronic and acute pain across pre- and post-surgical wards, which have become high on the agenda in a recent quality report (Care Quality Commission, 2014).

Research has highlighted various factors pertinent to inadequate pain management that can be broadly separated into three categories: organisational barriers, mainly relating to lack of resources, patient barriers, and staff barriers, with failings in adequate pain assessment traversing these latter two categories. A self-report survey of nurses in a university hospital found that the most commonly perceived organisational barriers were a lack of psychosocial support for staff, poor patient-to-nurse ratio due to low staffing and difficulty communicating with

physicians. Less common, but also reported were legal and institutional constraints (Elcigil, Maltepe, Esrefgil, & Mutafoğlu, 2011).

Nurses have also reported so-called patient barriers that affected their pain assessment such as patients being non-responsive or having difficulty completing pain scales (Schafheutle, Cantrill, & Noyce, 2000). A key barrier not reported by nurses in these studies was a reliance on their own subjective judgments of patients' pain rather than patient report despite the patient's description of his/her pain being defined as the primary indicator (McCaffery & Pasero, 1999). Due to the private nature of pain, adequate assessment is essential for highlighting pain mechanisms and options for alleviating pain (Turk & Melzack, 2011). A range of well validated and reliable measures are available that facilitate patient report of intensity, affect, quality, location, even in the case of patients with whom communication is difficult (Hadjistavropoulos, Breau, & Craig, 2011) and it is recommended clinicians be proficient in their use (Jenson & Karoly, 2011). Observation of pain behaviours can complement these reports, but should be undertaken systematically, rather than based solely on nursing judgement (Keefe et al., 2011).

A reliance on subjective judgement is particularly hazardous given gaps in clinicians' knowledge of pain (González-Fernández et al., 2014) as well as unhelpful cultural and social beliefs about pain and patients (Green, 2005). While such knowledge gaps have been found to be a barrier to adequate pain assessment, an awareness of best practice does not appear sufficient for adequate pain management (Watt-Watson et al., 2001). The uptake of educational interventions at the nursing level is mixed (Thompson & Stapley, 2011) and nurses have reported not using optimal pain assessment practices even when they were aware that those practices were desirable, relying instead on their own judgments (Titler et al., 2003).

Relying on subjective judgements of pain can also become particularly problematic in the treatment of individuals with pain whose origin is diffuse or difficult to locate, such as in the case of visceral pain arising from gastro-intestinal (GI)

disorders. GI pain is difficult to locate, in part, due to diffuse termination of visceral afferents (nerves returning to the central organs or central nervous system). These nerves may signal pain, but it is experienced as more dispersed relative to somatic pain, partly because nerves from the GI tract terminate across various spinal levels and function to signal distortion rather than the more localised sensations arising from nerves in skin and muscle (Drewes, Wilder-Smith & Staahl, 2008).

Diffuse visceral pain can be caused by organic GI disorders – those arising from an observable disease or pathogen – but also from a range of functional gastro-intestinal disorders, where no observable cause can be identified, and the disorder is instead identified solely by a change in the function of implicated systems (Messelink et al., 2015). For example, the origins of irritable bowel syndrome (IBS), the most common functional GI disorder, involve a dysregulation of communication along the brain-gut axis, leading to recurrent abdominal pain or alteration in bowel habits not explained by structural or metabolic abnormalities (Kumar & Emmanuel, 2015). This complexity can lead to greater challenges in the assessment and management of functional chronic pain disorders.

GI pain is complicated further by the influence of psychological factors. Communication between the brain and gut is made possible by homeostatic afferents from the GI tract, which ascend into autonomic reflex arcs in sub-cortical areas. These arcs normally operate below the level of conscious awareness. However, input from the prefrontal cortex and hypothalamus regulates the activity of descending pathways (Mayer & Tillisch, 2011). With this input, the influence of stress, memories of early adverse gastrointestinal experiences and beliefs about GI function can manifest in alterations to processes along the GI tract. Within the complexity of the brain-gut axis, there is thus room for the influence of a host of contextual and psychological stressors, which are not yet fully understood (Rapps Van Oudenhove, Enck & Aziz, 2008). For example, roughly 50-90% of patients with IBS met criteria for a psychological disorder, and this, rather than intensity of IBS

symptoms, differentiated those who sought help and those who did not. Further, participants who believed symptoms were associated with serious pathology reported more intense pain (Drossman, 1999) and negative close relationships have been found to be strongly associated with illness burden in IBS (Lackner, Quigley & Blanchard, 2013).

A seemingly self-evident psychological involvement in the experience of pain is apparent, to the extent that pain has been described as a homeostatic emotion akin to fear or depression (Craig, 2003) and Kennedy and colleagues (2012) have recommended that a thorough assessment of cognitive function be part of future research in IBS. However, the important influence of patients' beliefs and emotional state upon the intensity and duration of their pain can be contrasted with the approach to pain implicit in a medical view of the body. It has been argued that a passive body is the product of a medical approach that encourages, "the separation of doctor from patient, of person from body" as part of an "emotional defence against suffering" (Radley, 2000, p.299). Menzies Lyth (1960), in her seminal study of social defences against anxiety, argued that many of the tasks of caring were set up in a way that created distance between the patient and the nurse with the function of protecting nurses against the potentially overwhelming anxiety of working daily with death, disease and bodily distress. This distance can serve an important function for nursing staff. Patients have reported feeling higher levels of distress under the care of nurses who scored highly on measures of empathy and these nurses also received more complaints than nurses who solely offered instrumental support (Watt-Watson, 1997). One explanation for this, from the psychological therapies literature, is that an empathic stance encourages the expression of distress from patients (Winnicott, 1965). Thus, the relationship between affective involvement on the part of staff and effective pain management is a complex one.

A range of barriers to adequate pain management have been evidenced, which may have contributed to the suboptimal levels of patient satisfaction at the hospital

in the current study (UCLH, 2013). Nurses on GI wards in particular reported a sense of failure over not being able to feed patients and reported feeling ill equipped to manage patients' pain - some patients remained on these wards for long durations without making much progress, but also without appearing to be dischargeable (Williams, 2013). However, nursing staff have previously reported feeling frustrated at research that simply highlights where they are going wrong rather than informing improvement (Brown & McCormack, 2011).

Action research (AR) can be described as a style of scientific investigation that is "particularly suited to the identification of problems in clinical practice and to helping develop potential solutions in order to improve practice" (Williamson, Bellman & Webster, 2012, p.1). Brown and McCormack (2011) worked alongside staff using this approach with the aim of enabling more effective pain management on a surgical ward for older adults. An initial phase involving observations, focus groups and interviews highlighted barriers relating to communication, interruption of pain assessments and perceived autonomy among staff. These themes were then fed back in reflective sessions, with staff working as co-researchers in the implementation of changes to pain management processes on the ward. A similar approach was taken in the present study of pain management on a GI ward at a university hospital. The study took place concurrent to a wider hospital-wide pain initiative designed to improve how staff identify, assess, respond to and treat patients' pain, which arose out of suboptimal patient reports of pain management (UCLH, 2013).

Aims

1. To investigate the processes involved in pain management on a GI ward- including staff beliefs, attitudes and practices - using observational measures and self-report.

2. To explore the barriers identified by these initial investigations with staff in a reflective setting in order to implement improvements in pain management.

Method

Setting and Participants

The study took place in a university hospital on a 60 bed GI ward, comprising pre-surgical, post-surgical and non-surgical patients. With adequate staffing, one nursing team (one qualified nurse and two nursing-assistants) is assigned to approximately ten patients. There were approximately 10 qualified staff members across the ward during a shift.

Participants were clinical staff who had an affiliation to the ward. Inclusion criteria specified that participants were not required to be permanently ward-based, but were to be part of clinical teams assigned to the care of patients on the ward. This included ward sisters (head nurses) and nursing teams based permanently on the ward, junior doctors based temporarily on the ward, and GI consultants, pharmacists, anaesthetists, specialist nurses and pain team members who spent time across various wards. Interviews and observations took place on the ward, following consultation with head nurses.

Design

With an emphasis on researchers and practitioners working collaboratively, an AR methodology facilitates a space in which to investigate specific issues in clinical settings and generate solutions reflectively. Broadly, it involves a planning phase, followed by the implementation of a plan generated from analysis, followed by further fact finding to evaluate the results of the action (Williamson et al., 2012). AR shares some characteristics with a grounded theory approach in its iterative nature, but differs in its specific focus on an agreed clinical problem to be solved.

The specifics of the design were dependent on ongoing staff consultation and data-gathering. Overall, four stages were involved:

- First contact: A consultant gastroenterologist affiliated to the ward made helpful introductions and facilitated initial contact with ward staff. He and a head nurse were consulted about the practical aspects of the research protocol and design: the feasibility of key aims, ward policies and procedures, how to approach staff, preferred method of observation, where to set up and the timescale for the project.
- Consultation phase: The intention was to spend a prolonged period agreeing research aims with ward nursing staff, but it was evident that many staff were aware that there were difficulties in pain management and keen to take part in interviews and observations to explore processes further. This awareness may have been partly due to the concurrent hospital-wide pain initiative that had been introduced following an audit of pain management practices. While the ward in question had not yet been targeted directly by the initiative, the Acute Pain Team, a key off-ward resource, had begun to develop staff and patient educational packages and was in the process of identifying pain champions on each ward. Following first contact with head nurses, two consultation groups were sufficient to generate some initial key issues and suggest directions and targets for further investigation. Further, ongoing consultation and shared ownership of the research was continually facilitated in the ethnographic phase, particularly via the early interviews, which included questions that guided the direction of the research (see appendix F).
- Ethnographic phase: This involved an exploration of processes in pain management on the ward using semi-structured interviews and staff-patient observations. Interviews were no longer than 30 minutes. Staff discussed what they understood as key issues in pain management. Observations involved shadowing staff on an hourly basis or for the duration of a ward event, such as

medication round, with the intention of learning how pain was talked about with patients and observing pain management processes throughout the day. A key aim in the ethnographic phase was to get an impression of what happens from the moment pain is reported, through to the eventual implementation of some type of pain management, including what staff might do if things go wrong unexpectedly, what frustration and concerns they would have, and how supported they would feel to manage pain.

- Feedback phase: Finally, data from the ethnographic phase was disseminated and reflected upon with staff. Research in this area has found that that knowledge alone is not sufficient for change and that creating a space to reflect on practice is equally important (Brown & McCormack, 2011). This was borne in mind during the feedback phase where the aim was to promote autonomy and flexibility in discussion. Consultant gastroenterologists, nursing staff, the Acute Pain Team and the team involved in delivering the hospital-wide pain initiative all played key roles in the feedback phase.

Staff were involved in all phases of the study, with many taking part in more than one level. Initial fact-finding during the consultation informed the direction and emphasis in the ethnographic phase; ethnographic data determined the nature of the feedback sessions.

Ethics

The study received UCL Research Ethics Committee and local NHS ethical approval on 13th March 2104 (Project id.: 13/0732) (Appendix G), which allowed for the recruitments of participants from University College London Hospitals. All clinical staff affiliated to the ward in question were eligible to participate. Interested staff members were provided with an information sheet (Appendix H) and given the opportunity to ask questions before signing a consent form stating their agreement to take part (Appendix I)

Analysis

Interviews were audio-recorded and transcribed verbatim. Recording of observations of staff-patient interactions was discouraged by the head nurse as it was felt to be overly invasive. Instead, notes were taken *in vivo* and the transcripts of observations were pooled with the interview transcripts for analysis. A thematic analysis of the ethnographic data were guided by the six stages outlined by Braun and Clarke (2006):

1. Familiarity: the same researcher gathered, transcribed and analysed the data, which facilitated immersion in the data.
2. Generating initial codes: line by line microanalysis led to initial basic, open codes (see appendix J).
3. Searching for themes, figures and relationships (see appendix K).
4. Revisiting themes, ensuring internal homogeneity and external heterogeneity.
5. Defining and naming categories.
6. Producing the report.

This analysis was concurrent with ongoing data collection, which was guided by principles from grounded theory in two ways. Firstly, early interviews contained questions relating to key issues in pain management, which led to recommendations for further lines of enquiry. For example, a nurse would mention a key staff member involved in patient care, who would subsequently be approached for interview. Thus, “design like concepts” were developed during the research process (Strauss & Corbin, 1998). Secondly, ongoing data analysis shaped the interview schedule so that early interviews led to the identification of themes that were prompted for in subsequent interviews. The upshot was that recursion between stages 3 and 4, above, not only involved searching for relationships and revisiting themes within existing data, but returning to the field to gather further data. This option facilitated the enrichment of poorly developed categories, and the development of dimensional

codes via discriminate sampling (see appendix L for an example of discriminate sampling).

Unlike grounded theory, the generation of an overall theory solely from the data was not a core aim of the analysis. Instead, the predefined clinical issue, barriers and solutions to effective pain management, influenced the direction of the research and the weight given to various themes. It is perhaps useful to think of these elements of thematic analysis and grounded theory as tools utilised within the overall style of action research.

The vignette

Instead of presenting real excerpts of staff-patient interactions, which might have been overly exposing for staff in the feedback phase, the observations, which were pooled with the interview data for the thematic analysis, were also transformed into a hypothetical vignette (box 1). The vignette was developed following the completion of the thematic analysis and guided by the journey of pain management illustrated in figure 2. The vignette comprises actual quotations from interviews and observations, which have been integrated into a scenario involving a hypothetical patient and several staff members. The structure of the vignette is a composite of several nursing observations, junior doctor observations and consultant observations and its content embeds the themes elicited from the thematic analysis into a single narrative. It begins with a nurse-patient interaction, which is followed by a consultant-patient interaction and then a junior-doctor patient interaction. This vignette helped to give coherence to the themes. It is referred to throughout the results section and was also utilised during the feedback phase of the study.

Quality Assurance

The following principles, from Elliot (1999), were borne in mind during all phases of the study.

- **Owning one's perspective:** The researcher's concurrent experience as a clinician deserved extended examination, as it influenced all stages of the study. It led to a particular sensitivity to the impact of distress on staff and patients and an emphasis of themes that reflected this. Also, staff were informed of the AR approach, in which they could guide the direction of the research. A key tenet of AR is the empowerment of people through raised awareness (Williamson et al., 2012). This informed the weight given to different themes during dissemination. An examination of the potential influence of the researcher's stance is included at the beginning of the ethnographic and feedback sections of the results.
- **Situating the sample:** AR specifies the importance of recognising limitations on the generalisability of findings. The unique specifics of the sample and all relevant characteristics are made clear and any implications of findings discussed with reference to these specifics.
- **Grounding in examples:** representative excerpts from the data are included verbatim in the results.
- **Providing credibility checks:** The gathering of interview, consultation group and observational data provided the opportunity for triangulation. Further, two researchers independently coded a subset of the ethnographic data and discussed differences in coding schemes (appendix M). Fortunately, a parallel investigation into pain management was taking place across other hospital wards - this provided a further opportunity for validation of themes (see appendix N). During the feedback phase of the study, a subset of interviewees including a specialist pain nurse, consultant anaesthetist and ward sister were presented with the findings, as were a team of clinicians

involved in a concurrent hospital-wide pain initiative- they thought the themes adequately captured ward processes and highlighted themes that they thought most clinically pertinent.

- Coherence: Themes are illustrated in a diagram that shows temporal links in ward processes. Further, a hypothetical vignette (box 1) was developed to place the themes into a single narrative. The feedback phase also provided an opportunity for checks on coherence.
- Accomplishing general vs. specific research tasks: the limitations of the research based upon the sample and setting will be made clear. Priority was given to themes that would be clinically useful over those that would resonate with general readers.
- Resonating with readers: resonance with clinical staff during the feedback phase was a key determinant of the quality and relevance of themes.

Results

First contact and consultation

Discussion with a head nurse and consultant gastroenterologist led to an outline for the practicalities of the research. A side-room on the ward was recommended for interviews, which were conducted during a regular time-slot over a two month period. Table 4 shows staff involvement at different stages of the study. Initially, two consultation groups, one of nursing staff (n=5) and one of junior doctors (n=5) yielded initial amendments to the semi-structured interview schedule (see appendix O), highlighting key issues to explore in subsequent interviews (n=18) and observations (n=5). Appendix P illustrates the data gathering process and the job title of each participant.

Table 4, Participants involved in different phases of the study divided by staff group

Staff group, remit	Cons	Int	Obs	Fb
consultant gastroenterologist	1	1	2(2)*	13 (12)
ward sister (head nurse)	1	1(1)		1
Nurse	4	4(4)	1	9(7)
nursing assistant	1	2(1)	1	5(5)
junior doctor	5	3(3)	3	
Pharmacist		1		
specialist nurse, Pain Team		1	2(1)	2
project manager, Pain Initiative		1		
consultant anaesthetist, Pain Team		3		
clinical psychologist, Pain Team		1		1
pain champion (Nurse)				3
Pain Initiative Team (clinicians and researchers)				8 (4)
Totals	12	18	9 (5**)	42

Cons: Consultation, Int: Interview, Obs: Observation, Fb: Feedback, (n)*= number of new staff, i.e. not involved in any previous stage, (n**) = total number of episodes of observation, i.e. 9 staff were observed but some were observed in pairs.

Ethnographic Phase

Recruitment

A period of settling into ward routine was initially required. The researcher was based in a side-room and visited the ward at a regular time. This regular presence led to interest among nursing staff. Staff members who consented to be interviewed early in the study not only suggested other members of staff, but aided the researcher in tracking them down. Having a core group of staff members interested in the study thus helped with ongoing recruitment.

Flexibility was required for staff-patient observations in order to accommodate variations in times of ward events. For instance, the schedule for ward rounds often changed in response to emergencies and staff availability. Again, the researcher was reliant upon staff members to inform of such changes. The process of recruitment itself thus provided insights into many of the themes relating to pain management processes outlined below.

Researcher perspective in the ethnographic phase

Therapeutic techniques, such as statements that demonstrated empathy, the adoption of a Socratic approach (Padesky, 1993) and questions grounded in theory on systemic consultation (Ceccin, 1987) such as 'If things were better 6 months down the line...' were utilised to facilitate open and productive discussion. The thematic analysis and subsequent dissemination of findings were informed by literature on the brain-gut axis, which highlights the impact that anxiety, distress and memory can have on GI pain. There was also a bias toward themes that might be clinically useful for the ward over those that might hold a more academic interest.

Themes

In keeping with the aim of raising awareness, an attempt was made to synthesise themes so that they represented pain management processes as a journey involving patients, staff, the local ward environment and the wider hospital setting. Emphasis was given to points at which an obstacle, a belief, an action, an interaction or a decision could influence staff members in the process of managing pain. Figure 2 shows how themes were broken down by the researcher into 1, barriers; 2, staff-patient interactions; 3, resources; and 4, decision-making processes. Arrows represent hypothesised directions of influence based on interviews and observations. Within the resources section, unacknowledged resources are separated and not connected to demonstrate that they may be utilised less in decision-making.

1. Barriers

Box 1 of figure 2 shows barriers to pain management. These are divided into *logistical delays* and issues in *staff communication*.

Logistical delays

All nursing staff mentioned delays. Searching for the keys to the medication cupboard or for a second nurse to countersign the administration of controlled drugs were the most common delays reported:

Consultation Group (CG) 1: You can't give opioid by yourself but if somebody is busy you are walking around looking, so you say, "can you help?" They say, "I'm busy". So, five minutes have gone and then you need to get keys, and it's a huge big ward and the person is right down other end.

However, it was also thought that restrictive access was important for security:

Interviewee (I) 3: There's one set of keys, I don't find it a problem. I think it helps with the security of things...sometimes we're short staffed and it can cause problems.

Many nursing staff agreed that short staffing exacerbated delays, which in turn increased the load for each staff member.

Staff Communication

Complications in written and verbal communication were mentioned by all interviewees. Nursing staff tended to agree that communication between ward-based staff was not a problem. However, communication between different clinical teams, particularly those not based on the wards, was more complicated. Further complications arose when patients moved from the care of one team to another, such as from surgery onto the ward. Issues in *documentation, availability* and *receptivity* are outlined below.

Documentation

Problems in documentation affected staff members' ability to readily identify patients' needs. Minor lapses, such as initials instead of a stamp or full name being

used by consulting teams led to some confusion, particularly when basic pain medication was not written-up:

I8: ...admitting a patient without pain killers, no drug chart...and finding who the patient is under, because whenever you go to this [team]: "he's not under this team", "he's not under this team".

The ward pharmacist outlined more problematic gaps in the documentation of chronic pain medication:

I7: Most surgery is elective, so we know patient is coming. By then we should have a really good impression of pain, but very little emphasis is given to pain medication compared to consent and whether they are physical healthy.

Consequently, chronic pain patients had their pain medication routine disrupted pre-surgery, which caused difficulties when they arrive on the ward. A junior doctor made a comparison to diagnostic histories, which seemed to be more readily accessible:

CG2: That's what we do with Crohn's patients: you know the history of their disease and what drugs they've worked through and failed, so similarly if that applied to pain management, knowing what they've tried, why it stopped what they've then gone on to, a history.

Not having knowledge of a patient's history was particularly problematic during the transition to out of hours support:

I3: Our handover goes on at about 8 o'clock, so we have 3 hours of trying to get hold of the twilight [doctor]....and we're trying to work out a way to get some sort of pain relief for the patient even though they don't know the patient's full history.

Availability

Evenings and weekends were also problematic in terms of the availability of off-ward support:

I3: When there are a hundred people calling for different things - there might be a critical patient, they might be stuck with that patient - you're calling for pain relief for your patient, it's quite hard to get [the twilight doctor] to see your patient.

Though nursing staff generally agreed that it was difficult to enlist off-ward support out of working hours, one nursing assistant highlighted the benefits of less off-ward involvement:

I4: Weekends and evening are fine, because you haven't got everyone going off for tests, you haven't got doctors coming around saying do this, do this...and you can spend more time with the patient.

Within working hours (9am-5pm), the Acute Pain Team were spoken of regularly as a key resource in pain management:

I9: We've got a very good pain team here. They are very good when you need them. They come straight away. They do their rounds every day and review all those patients who are on their list.

Several ward-based staff reflected that they had never actually met any pain team members, and the opportunity to do so would be appreciated, particularly for advice on the suitability of referrals:

CG2: There's definitely tension if you try and discuss with the [pain team nurses]. They are under so much pressure – "you really don't need to be ringing me now" - it would be nice to meet them to know them better to understand better what their service provision is so that then we could time our referral better or at least give them a bit of a break.

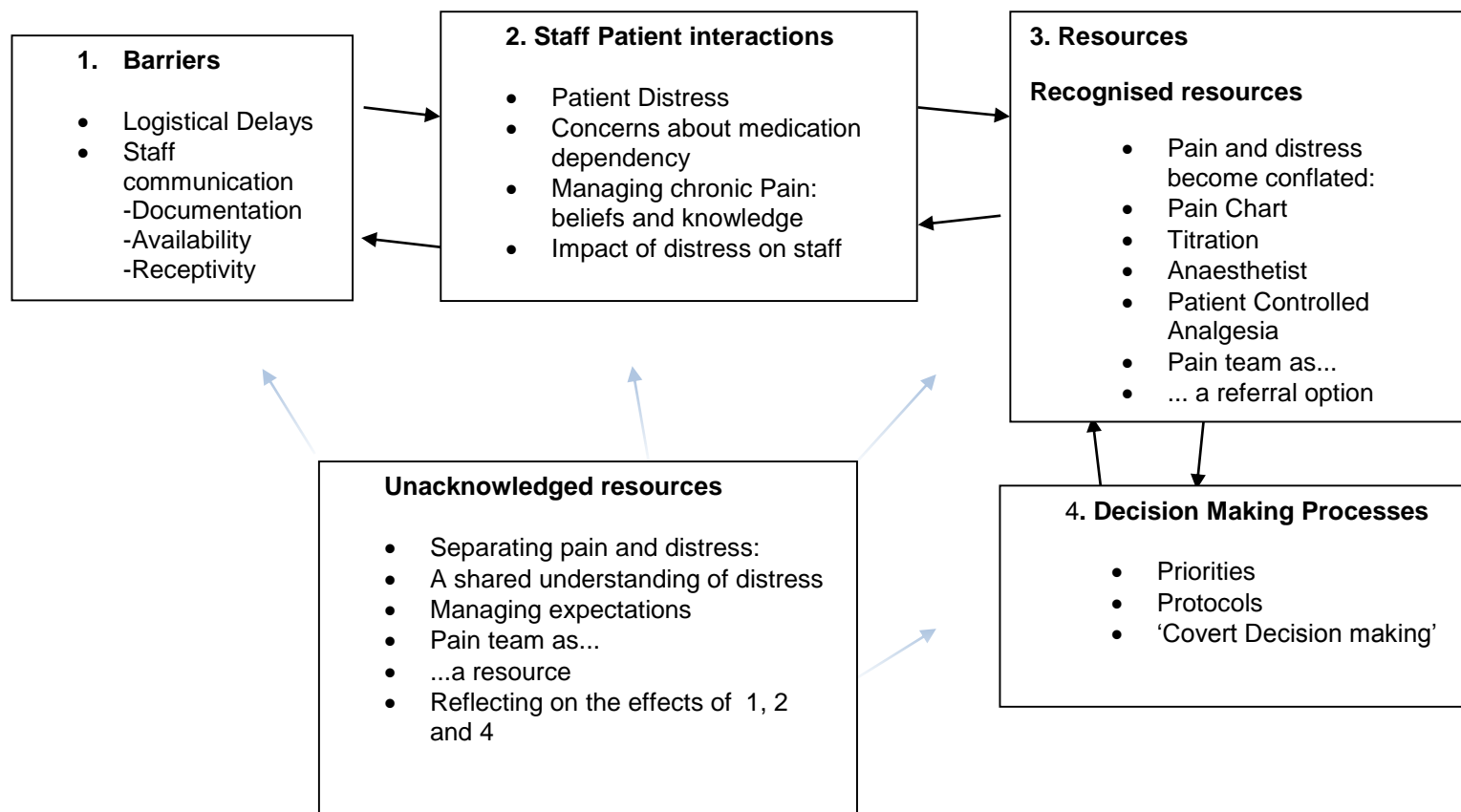


Figure 2, Diagram of themes

A Chronic Pain Team was also linked to the hospital, though geographically separated from the main site. This impacted their availability. A consultant anaesthetist drew comparison to other hospitals:

I1: So here it's split like that because the Chronic Pain Team are based in the outpatients service, and because the outpatient facility moved to a different location it's been separated, but in most hospitals it would be all within the same cohort.

Though not resourced for the ward in question, some patients were seen by the Chronic Pain Team, for example, if they had been previously under their care. Consultants in both pain teams recognised that many chronic pain patients on the ward would benefit from Chronic Pain Team input.

Receptivity

Due to a lack of clarity around pain team roles, there was at times hostility in response to requests for support. The negative consequences of this were explained by a staff member affiliated with both pain teams:

I12: I don't think that the pain team are often as approachable as they can be. So there's a little barrier to any phone call or request ...if you feel like you're going to get told off or slightly have a negative reaction when they refer think it discourages the nurses to refer.

2. Staff-Patient Interactions

The struggle to alleviate *patient distress* predominated in difficulties in staff-patient interactions. *Dependency concerns* were also an important factor. These issues culminated in the inadequate *management of chronic pain*, though many of the issues outlined in this subtheme applied in varying degrees to all staff-patient interactions. The vignette (box 1) also captures issues relating to staff-patient communication.

1 There is a complex pain patient on the ward. He is known well to staff as it's his third time on
2 the ward this year. The patient is crying out for pain relief; swearing and pleading with the
3 nurse who can see him wincing in pain. She is unsure whether this takes priority over a
4 planned stoma change but hates seeing her patients in pain. She tries to reassure him by
5 saying she will get hold of the pain team as soon as she can and that she has tried calling
6 the overnight anesthetist. She is hesitant to call again. He is very busy; last time she called,
7 he was abrupt and seemed annoyed at her. She doesn't know how much of a priority this is.
8 She tells the patient she will arrange his Oramorph just as soon as the other nurse is free;
9 she needs a countersignature and they are short staffed – a regular occurrence as bank staff
10 have recently become less willing to work on T9. She also has to get the keys from the other
11 end of the ward and is unsure who has them. The patient shouts behind her as she leaves, "I
12 know what meds work for me and that dosage won't do anything". She says, "That's all that's
13 written up". The patient is angry that his chronic pain meds were stripped down for surgery
14 and that he has to ask for every dose. He feels disempowered and scared that something
15 might be seriously wrong with him. As the nurse gives the Oramorph she explains that the
16 junior doctor will do the ward round soon and he can arrange for a medication change.
17 Oramorph provides some relief and the nurse asks whether the patient wants to go for a
18 walk or a smoke to take his mind off the pain. She wonders, as he goes down for a cigarette,
19 how he can be in so much pain and still go for a smoke. She is exhausted by the heated
20 exchange and upset that she couldn't do more to help the pain.

21 The patient is able to report more calmly to the junior doctor on ward round that the
22 prescribed meds don't work. He tells the doctor that he knows his own medication routine.
23 The junior is unsure how to react to this patient, who seems to know more about medication
24 than other patients. He notices the patient in the next bed along, responding well post-
25 surgery with gradual reduction of medication. He wishes they were all like this. He can see a
26 pain plan written in the notes along with 'DO NOT ALTER'. He can see the initials of the
27 surgeon, but can't make out who it is. He is unsure of the patient's history and thinks it would
28 be easier if there was an explicit pain history in the same way they kept a diagnostic history
29 like on the ward he just came from, though he would never suggest this aloud. He is
30 uncertain about what to do and thinks through the WHO pain ladder. The patient's PCA
31 machine has been beeping throughout and the nurse comes to fix it. She explains how much
32 pain the patient was in, and together they discuss with the patient the plan for the next few
33 days.

34 Coincidentally, a consultant gastroenterologist is completing his ward round at the
35 same time. He comes to the bed with three trainees. He asks about fluids and bowel
36 movement since surgery and checks stitches. "Everything looks ok", he says, "Is everything
37 ok?" The junior doctor mentions the patient's report of pain. The consultant says that pain is
38 expected but the patient is doing well. He asks the patient, "Any pain?" The patient says he
39 is fine. The consultant tells the junior to contact the pain team for a new pain plan. After the
40 consultant leaves the patient laughs and says that everybody looked like school children
41 being told off and that nobody said a word while the consultant was there. Frustrated, the
42 nurse asks why the patient did not mention his pain to the consultant.

43 The junior doctor says that pain might be expected now that the epidural has been
44 removed, but that no damage is being done. Has the patient tried breathing exercises, he
45 asks, or distracting by watching TV or going for a walk. The patient explains that he had a
46 very bad experience last time he was in hospital. The doctor says, "That must make it extra
47 tough, then", but reassures him that this time things are under control and there is a plan for
48 the coming days. The doctor makes a joke and moves along. The patient is now relaxed and
49 smiling. He tells the nurse he is going for a cigarette and would like some Oramorph on his
50 return. The doctor writes, 'contact pain team for new pain plan' in the notes. The nurse goes
51 to change her other patient's stoma bag and then goes on a break.

Box 1, Hypothetical vignette of a chronic pain patient

Patient distress

Beyond the physiological impact of pain on patients, there was the distress caused by the uncertain and, at times, traumatic experience of being in hospital, away from familiar support and normal routine:

I17: patients are scared, have lost control and feel disempowered.

I15 In my experience, uncertainty adds to the overall distress and if the situation can be rationalised some relief can be provided on top of medication.

Disruptions to patients' medication routine, as highlighted above by the ward pharmacist, also contributed to this sense of disempowerment.

Concerns about medication dependency

Most non-nursing staff were cautious about any concerns that nursing staff might hold about patients becoming dependent on medication:

I11: There is the cliché that these people with chronic pain do maybe get slightly dependent on opioids. But then it's very difficult to work that out and it's quite bold to say that someone isn't in pain they just want more morphine. It's almost a bit rude.

However, nursing staff did generally act on patients' requests for medication - many repeated the mantra 'pain is what the patient says it is' during interview – and, while dependency concerns were expressed by the majority of nursing staff, it appeared to be the case that such concerns were grounded in experience and raised with patients' best interest in mind:

I3: [The patients] know it's 2 o'clock so they press the bell...right on the button. They never miss it, even if it's 2am or 4am, they never miss it. Sometimes you could actually sleep through it...I don't know if it's like a natural clock. It's quite amazing sometimes.

GD: And that feels like a slightly different type of thing to the people...

I3: To the people who actually really need it, because if they're tossing and turning, you can tell, but if you're asleep and it's 4am and {gestures waking up}: "I need my pain relief" and then they're asleep...that feels like something different.

Managing chronic pain: knowledge, demands and beliefs

Difficulties in staff-patient interaction culminated in the inadequate management of chronic pain. The ward pharmacist highlighted problems that can arise when a chronic pain patient comes in for surgery:

I7: A man with a fentanyl patch came in for surgery and they removed this before surgery, so the patient is in agony when he comes to the ward. They should leave normal chronic pain meds and just add in acute management.

Difficulties in understanding chronic pain, particularly when faced with a patient who holds some degree of expertise, led nursing staff and junior doctors to report feeling overwhelmed:

CG2: The patients have an extensive knowledge of these drugs and you don't know all the drugs they've tried in the past and they may have been to various different hospitals. So there's trying to unscramble all of that while trying to deal with their pain at the moment.

A lack of differentiation between acute and chronic pain was highlighted by several senior clinicians:

I16: The chronic pain patients live in a space side by side with post-surgical patients... and that's good in a sense that no one is stigmatised but it's bad in that unless you are well informed as a member of staff you tend to think "these are both patients with pain side by side, yet you're a good person because you're responding to your Oramorph, you're a bad person because you say you're not".

However, most nursing staff did appear to recognise the particularities of chronic pain, on reflection, at least:

I5: It's not like a pain headache, or a hangover headache where you take tablets and it is gone by tonight...I feel very sorry, imagine, it must be very hard for a lot of these patients to accept that this will be there for a long time.

A consultant anaesthetist outlined the extra demands involved in managing chronic pain:

I1: patients with complex pain, on average their consultations with the pain team are lasting about 45 minutes to 2 hours. Patients with longstanding pain need much longer consultations, more repeats, input from psychology and physiotherapist.

These complications often led to fraught interactions. Box 2 does not relate to any particular belief expressed directly by a staff member about a patient, but is an abstraction based on several observations and statements from experienced staff members about the impact on staff of treating chronic pain without adequate knowledge or resources.

The chronic pain patient as...
...demanding: 'I need this right now'
...unwanted expert: 'I know my pain routine'
...villain: 'Why can't he be good like that patient?'
...critic: 'That dosage won't work for me'
...threat: 'I don't respond in the usual way'
...liar: 'How can he smoke if he's in pain?'

Box 2, Attitudes toward chronic pain patients ¹

¹ 'Villain' has especially negative connotations, but adequately captured the exasperation of staff when they felt unable to help chronic pain patients. It was a term used by a consultant gastroenterologist as he described how staff might come to view these patients in such a context.

Impact of distress on staff

Complications in pain management understandably affected staff. All professions acknowledged this, particularly in reference to chronic pain. However, the response tended to vary, partly in relation to staff group. Among consultants, pain team members and to some extent junior doctors there was a tendency to become more dissociated in response to on-going patient distress:

CG2: I think other people might think it but not say it, the patients who are quite demanding in terms of pain management, I think you almost become hardened to it...you pull away from having sympathy.

This dissociation was closely related to a sense of hopelessness:

CG2: You almost become dissociated from what they're saying and just accept that...you can't really improve that situation.

A lack of confidence in managing complex pain was apparent across all staff groups. However, it was the junior doctors and nursing staff who acknowledged most explicitly the effects of this. While junior doctors expressed a lack of confidence, nurses recognised the more severe impact on physical health that could occur as a result of managing chronic distress:

I8: I'm a firm person...I learn to take blows from [patients]...and I always say to the nurses just ignore them they're in pain... but I've seen many nurses and managers break, literally tears.

Responses to distress may have also varied because of the discrepancy between hearing about pain second-hand, which was more often the case with consultants and off-ward staff, and seeing it first-hand, as this nurse described:

I5: You are holding their hand you are saying "I am doing my best. You know I can't give the medication because you know if it's not written. I'll call the anaesthetists because the doctor doesn't know what to do anymore".

This discrepancy is also illustrated in the vignette, specifically lines 1-5 where the nurse sees pain first-hand, compared to lines 21-24 where pain is reported second-hand to the junior doctor and lines 34-40, where pain is not reported to the consultant.

3. Resources

It appeared there was a discrepancy between what most staff did in response to pain and what were acknowledged as resources. Namely, staff did a lot more to alleviate distress than was explicitly commented upon as a resource in pain management.

Recognised resources: conflating distress and pain

There was a tendency, among nursing staff in particular, when discussing available resources, to conflate pain with distress so that if pain could be reduced so could distress. With this approach, the chief resources available were the medication written on the pain chart, the flexibility to titrate this, the patient-controlled analgesia (PCA) and the ability to refer to an expert team or staff member. A ward sister described the pull between implicitly recognising the value of understanding a patient's experience of pain, yet having to explicitly rely on pharmacological resources:

I6: You know how [the patient's] pain is managed, you know how it works, you know how it functions for her and you know where you're going to end up with that patient, because you know them so well, but at the end of the day, pain is what the patient says it is and you have to do your best to get on top of that however you can and we can only use the resources we have and the only resources we have is the pain team and then they've got other resources like they could then take a patient down and do a Lidocaine (local anaesthetic) infusion.

This longer extract describes how well nurses understand their patients' pain, but how this understanding is not translated into a useful resource. Instead, it is the expert team who can provide more complex pharmacological treatment that become the resource. The ward sister went on to more explicitly comment on the potential value of other resources, but again, this was in the form of another expert:

I6: We don't have anybody to focus on the mind which would help... if we had a psychologist or there was a psychologist attached to the pain team they could get involved.

It was recognised by many of the junior doctors that utilising an expert team as a referral option could be both helpful and unhelpful:

CG2: it's really good we've got the pain team but it also deskills you or doesn't let you build your skills up with prescribing certain things because you rely on the pain team so much.

I10: If it's the weekend when you see lots of patients and you're in a rush...if the patient's complaining of pain I'll say "oh we'll get the pain team to see you", knowing full well there isn't a specific pain team and it's more of a 'push the issue to the side'.

Unacknowledged resources: separating distress and pain

The themes outlined below highlight resources that were already being used by many staff. It was felt that an acknowledgement of their utilisation could help raise awareness and prompt reflection during the feedback phase. This section was particularly informed by the idea of distress as separate from but causally related to pain.

A shared understanding of distress

A consultant gastroenterologist outlined how taking a more psychosocial view of pain could facilitate a shared understanding of the patient's situation by helping staff recognise that factors outside pain contribute to distress:

I16: You can get a dialogue about non-morphine based pain approaches that then hopefully allows you to opens up other things: that pain is driven by the fact that "I'm stressed about whether I'm getting paid, or mortgage is paid, or kids doing exams. I'm frustrated about being in hospital for such a long time and I'm losing track". The other thing it could do is give the patients an ally. At the moment the patients feel that they're raging this very lonely battle on their own.

Two nurses on the ward demonstrated the above approach in practice. The first described utilising non-pharmacological resources, the second, what trying to be an ally can look like:

I5: It is very important for [patients] that you take on board what they are saying to you and their feelings are important to you as a nurse...sometimes the patient is just anxious...you say "why don't you go out for some fresh air or go to a different environment just to move your legs a little bit? How bad is it? Do you need me to talk to you? Is it anxiety? Is it physical pain or is it more than that?"

I3: If [patients] can see that you are trying your best, some of them even though they are upset, do calm down quite a bit...just explain to them, they can even walk with me and watch me call [the doctor] because sometimes they think, "Oh you're just walking off and saying that you're doing it", but then if you show them that you are doing it...letting them know that we're both waiting.

The excerpt from interviewee five also demonstrated the value of talking about pain non-diagnostically, so that priority could be given to a patient's beliefs about

pain and the distress it can cause. Patient education on pain was also recognised as beneficial for facilitating a shared understanding:

I15: Helping to educate the patients about the cause of their pain invariably helps.

Managing expectations

Recognising the impact of uncertainty and loss of control on distress opened up the idea that certain points in the patient's journey may be particularly difficult. A nursing assistant outlined what can happen when an epidural, which has numbed the patient from the waist down, is removed:

I4: So they're expecting to be pain free and we have to sit down and explain, "Well you've had major surgery, it's going to hurt", but they don't expect it, because they've had that analgesia the whole time.

GD: So just a few sentences would be helpful?

I4: Yeah, just to sit down and say "right it is going to be painful, we're going to give you pain killers but no matter how much we give you it's still going to be uncomfortable to move, to cough."

Many staff members recognised the importance of managing expectations by giving the patient a plan for the coming hours or days. A nurse described how a medication plan might be provided:

I9: "If it doesn't work come back and we'll get you something else, maybe a Tramadol. That's stronger, and if it doesn't help again, after a couple of hours, then we'll get something stronger"...There's something they can expect if this doesn't work.

Lines 43-48 of the vignette demonstrate planning and talking about pain non-diagnostically.

Pain team as a resource

There was a suggestion among many staff, that, rather than just as a referral option, the pain teams could be utilised as an educational resource and share their expertise:

I11: I don't know how willing [the pain team] would be to hand over what they do...having a set of protocols for example that's on the Internet and printed leaflets would be good. Maybe some education for junior doctors as well.

A member of the Acute Pain Team agreed with this:

I12: I think they should be able to informally refer, "would you mind just having a look at this patient?" that they need help with, even if it's basic stuff.

A hospital wide initiative involving the Acute Pain Team was in the process of being piloted at the time of the study. The pain team had begun to identify 'pain champions' on each ward, though not yet the ward in question, with the aim of promoting shared expertise via educating staff and patients. Staff involved in this initiative played a key role in the feedback phase of this study.

4. Decision making

When staff made decisions about utilising resources, *protocols*, *priorities* and *covert-decision making* all appeared to play a role. During the feedback phase, the elucidation of this theme helped to highlight the actual process of decision-making as an important stage in pain management.

Protocols

Decisions could be informed by protocols. A junior doctor described the S.O.C.R.A.T.E.S. diagnostic acronym:

I11: You know the medical school teaching about pain follows an acronym? SOCRATES –site, onset, character, radiation, associated symptoms, timing, exacerbating, and relieving factors and then severity, but that's more for a diagnostic type thing.

The World Health Organisation (WHO) pain ladder was also followed when prescribing basic pain medication. Similarly the pain team had recently introduced a stepwise approach to treating pain:

I13: 'assess-treat-reassess-escalate.'

Protocols were seen as beneficial, but it was recognised that in the management of chronic pain, it was more difficult to develop a protocol.

Priorities

Nursing staff often handled various simultaneous demands. This nurse outlined the quandary of priorities on the ward:

I8: I have a patient who needs their breakfast and they're there watching you feed that patient because they're wet and they say my wetness is my priority I need to be changed and they're not continent and that person cannot feed themselves and you have to feed so everybody is demanding you to do this and this.

Nursing staff also had to balance the priorities imposed contractually, such as the need to complete paperwork that documented the completion of tasks, with what may have been more personally felt priorities, such as the alleviation of patient distress. Similar issues arose in pain management:

I3: If you're stuck in the side room, changing a stoma bag, and need pain relief it's hard to actually get the pain relief...certain things can cause problems....you can't leave a patient leaking all over themselves to run out and sign a signature.

Lines 3-8 of the vignette also illustrate the pull between professional and personal priorities. One outcome of so many competing priorities was that simply talking with patients – a task that which seen as less immediately necessary – slipped down the list of priorities.

'Covert decision-making'

Priorities and protocols formed part of what one interviewee termed 'covert decision-making processes' (I16). These processes were also influenced by many of the staff communication barriers highlighted above, particularly the imagined receptivity of potential sources of support. Thus, the response of the referral team to a request or the memory of a previous encounter with a specialist team could influence future pain management decisions.

Feedback Phase

The decision to move from the ethnographic to the feedback phase was guided by three main indicators. Firstly, with a few exceptions, recruitment began with permanently ward-based staff and expanded to include temporarily ward-based staff and then off-ward teams. This process was informed by the suggestions of interviewees. The final interviews were with staff members who were most distant from the ward while still directly involved with pain management. After these interviews, there was a felt sense of completion to the data gathering process. Secondly, analysis of the latter interviews led to a relative saturation of the data - points that had been raised by early interviewees had been commented on by off-ward staff in latter interviews, leading to an enriching of existing themes, while new themes arose less frequently. Finally, the researcher was limited by a definite end date – a submission deadline - that was independent of the ward being studied. The ethnographic phase was undertaken with an awareness of this limitation, and, while themes could have been enriched further by collecting data from more nursing staff

or broadened by expanding data collection to include the wider system, it was felt that termination occurred at a point that balanced researcher resources against the aim of elucidating pain management processes.

Researcher perspective in the feedback phase

The aims of facilitating raised consciousness and empowering staff (Williamson et al., 2012) influenced the final phase of the project. In particular, emphasis was given to themes that highlighted the disparity between what staff did in response to distress and what they recognised as resources. The idea of separating pain from distress, particularly in chronic pain management, was commented on by specialist nurses and pain initiative team members as especially useful – this idea formed a common thread throughout the feedback phase. The need to ‘hand back’ initiatives to nursing staff and pain teams, before exiting the situation, was also a priority.

Feedback stages

The elucidation of pain management processes using the diagram of themes (figure 2) and the vignette (box 1) formed the basis of initial feedback to staff. Beyond this, there was a pull between reflecting on ethnographic data and providing solutions, which varied across staff groups. Broadly, there were three feedback stages:

- Consultant feedback
- Pain team/pain champion feedback
- Nursing feedback

These were followed by two further stages that concluded the project:

- Final consultation
- Handover to pain team

1. *Consultant feedback, n = 13.*

The gastroenterologist involved in initial consultation arranged for the feedback of findings to a group of GI consultants who worked across the hospital. Feedback took place in a 15 minute slot at the beginning of a professional meeting. The intention was to reflect upon the ethnographic phase, using the diagram of themes (figure 2) and the vignette (box 1). However, the consultants were short of time and the meeting was for the purpose of discussing patients. After a short time, the researcher asked if the findings being presented were relevant. Helpfully, this led to a discussion in which one consultant stated that this was not the setting for the type of discussion intended. Another consultant captured the mood of the room when he said, "What do you want us to do?" There was an agreement that a list of practical solutions could be generated via email consultation. The consultants also provided a list of measurable outcomes that might capture any improvements in pain management processes, which also served as potential areas for future research.

Though this plan and the resulting document proved useful for further feedback to other staff groups, the solution-focussed approach also reflected how little time consultants had to think through alternatives to the current approach to pain management.

Solutions to pain management document

The generation of a list of potential solutions and outcomes, grounded in data from the ethnographic phase (see appendix q) was developed with input from a consultant gastroenterologist. The document is divided into three columns. The first column is a list of barriers to pain management, highlighted during the ethnographic phase. The second column contains possible solutions to each barrier. Most of these solutions were also taken from the ethnographic data, based on suggestions or comments by staff members during interviews. The third column contains feedback elicited from the feedback sessions below. One solution, the Well-being

checklist, was not extracted from the ethnographic data. Instead, it was developed and amended as a result of ongoing discussion with nurses and pain team members during the feedback phase.

2. Pain team/pain champion feedback, n = 6.

One upshot of the hospital-wide initiative to target pain was to aim for a nominated pain champion on each ward. The findings were presented at one of the pain champion monthly team meetings. Present were two representatives from the pain team, three pain champions and a clinical psychologist.

Given time constraints, the vignette was not used. Instead, the diagram of themes and the solutions document were the focus. Many solutions were seen as potentially useful.

Discussion highlighted the importance of not applying the Chronic Pain Passport (appendix q) unthinkingly, and of keeping it up to date.

A member of the pain team highlighted the potential pitfalls of brief drop-in sessions. Namely, what begins as a query often involves a whole case discussion, and the pain team are currently under-resourced for this. Further, there would be the issue of patient consent for referral, and uncertainty around accountability and risk, particularly, if what was discussed informally was used to inform a clinical decision that ended with harm to the patient. As an alternative to informal referrals, the pain team had begun to offer educational sessions on some wards, where general advice and guidance on pain management was given.

The idea of separating pain and distress resonated with the group. The WHO ladder and the pain team's stepwise approach (assess-treat-reassess-escalate) to treating pain were discussed alongside suggestions of what was missing from these existing protocols. It was agreed that a focus on potential sources of anxiety and distress due to being in hospital could be helpful. Questions such as: 'When did the patient last get up?' 'Do they know the plan for the coming days?' 'Are they aware of

what pain is to be expected and when?’ What was their last experience in hospital like?’ were suggested. This formed the basis of a Wellbeing Checklist (see appendix R) which was taken forward to the nursing feedback session.

A member of the pain team also highlighted a similar approach being taken at another hospital she worked at, where psychosocial ward rounds were being introduced to prioritise distress and psychological wellbeing. A pain champion nurse compared the potential introduction of a checklist to previous attempts to target patient needs. One of these was “intentional rounding”; five questions, relating to needs, toileting, position, plan and introductions to important members of staff, which had been introduced previously, but which, he reported, “fell by the wayside” somewhat, as simply another task to complete. He thought that, unless the task had immediate benefits, specifically in saving time, it may go a similar way.

3. Nursing feedback, n = 14

This took place in a 45 minute slot on a ward educational day. A presentation on pain assessment earlier in the day meant nursing staff were already prepared with some ideas about pain. Given the longer duration and that the group comprised staff who were based on the ward on which the observations and interviews were conducted, the session started with a reading of the vignette, with a pause for discussion after each paragraph.

The group agreed that the content accurately reflected pain management processes, and the vignette was a useful source of discussion throughout the session. The diagram of themes also resonated with staff but, understandably, nurses were not sure what to make of themes that simply described ward processes. However, as discussion moved toward recognised and unrecognised resources, engagement increased. Group members reflected on the importance of separating pain and distress - this was also something that had been mentioned in

the morning session. Patients feeling believed was highlighted as a core issue, which echoed the idea of a shared understanding of pain.

The solutions document was then evaluated. Nursing staff divided into 5 smaller groups and selected some solutions they thought were useful and some that they thought were less feasible:

The Chronic Pain Passport was chosen by two groups as useful, but they raised concerns about maintaining its authenticity, if it was kept by the patient.

Drop-in sessions were also mentioned by one of the groups as useful but the exact nature of such sessions was not discussed.

Training on patient-controlled analgesia pumps for nursing assistants was seen as less feasible because of accountability and registration issues - nurses would be held accountable for any mistakes.

Introducing a second set of medication keys was also seen as unfeasible for legal reasons. One group member stated that on a previous ward they had worked there had been a second set kept in a key-coded cupboard. Another group member wondered why the controlled drugs could not be stored in a locked room with a key-code rather than a key.

There was discussion around the idea of a pain champion. One group member said there was already a floating member of senior staff on the ward during each shift, but others said with short staffing this was not always possible.

The Wellbeing Checklist was also discussed. Overall, group members thought this was useful but several staff commented that nursing assistants were very good and already did these things. Other members said that perhaps an explicit checklist would be useful for new staff members.

Further to thinking through solutions, one member of staff commented on the benefits of simply raising awareness of pain management issues: "We know some of these things, but it is useful to be able to think about them again".

Overall, discussions during the feedback stages were helpful for three reasons. Firstly, they served to validate the themes arising in the ethnographic phase. Secondly, they led to the generation of a solutions document which was amended in response to ongoing feedback. Thirdly, they brought to the fore issues in pain management that many staff had been aware of but not reflected upon.

4. Final expert consultations

The revised set of solutions and Wellbeing Checklist were discussed with a head nurse, psychologist, speciality nurse and GI consultant leading to a final set of recommendations.

5. Dissemination and handover

Unexpectedly, during the feedback phase, it was the Acute Pain Team rather than the ward nursing staff who took hold of the findings, and with whom much of the handover of findings took place. The head nurse was content for this to be the method of dissemination, as it was recognised that with the impending hospital-wide pain initiative, the ward would benefit from closer involvement of the pain teams.

All potential solutions with feedback (appendix q) along with the Wellbeing Checklist (appendix R), the vignette (box 1) and the diagram of themes (figure 2) were presented at a second pain champion meeting and a Trust-wide multi-disciplinary presentation. There was also a final meeting with two specialist nurses from the pain team, with the explicit agenda of handing over findings to be integrated into the wider pain initiative. Researcher involvement concluded with a video-recorded interview. A clinical psychologist asked questions about key findings of the research. The intention was to use the finished video for the purposes of nurse education and as part of any future business proposals for increased resourcing.

Discussion

The aim of this study was to explore barriers and potential solutions to effective pain management on a GI ward using an action research approach, and to reflect on findings with staff. The study took place at the same time as a hospital-wide pain initiative, following a push to improve patient pain satisfaction outcomes across the hospital.

Many of the barriers found in this study are in keeping with previous findings. Delays due to checks, security measures and the impact of short staffing echo the institutional constraints found by Elcigil and colleagues (2011). The current findings also expand on research demonstrating a tendency for staff to rely on their subjective judgments of pain (Titler et al., 2003) despite recommendations that patient judgment is the most reliable indicator (McCaffery & Pasero, 1999) by highlighting dilemmas staff experienced when making clinical decisions. The recommendations of previous research perhaps fall short of capturing the justified concerns of nursing staff about chronic pain patients becoming dependent on increasingly strong doses of opioids that did not appear to relieve pain, and their awareness that psychological and social factors may be important contributing factors in chronic GI pain.

Debates about the utilisation of quantitative measures in pain assessment, prevalent in previous research (Jenson & Karoly, 2011), did not arise as a major theme. However, making space to speak about pain was a key theme. Ethnographic data demonstrated that pain was often assessed from a diagnostic viewpoint. Less emphasis was given to the distress caused by pain, and to other factors that may have contributed to patients' distress. Further, while clinicians often engaged in attempts to alleviate distress – for example, by providing plans for the coming days and managing patient expectations about pain – these were not acknowledged as resources in the way that pharmacological interventions were.

The contribution of distress to the experience of pain has been disseminated extensively. Loeser (2005) distinguished between nociception, the detection of tissue damage; pain, the response to nociception but also occurring in the absence of damage due to nervous system abnormalities; suffering, the negative affective response to pain, but also “to fear, anxiety, stress, loss of loved objects and other psychological states” (p.19); and pain behaviour, what is done to attempt to alleviate pain and suffering. With this understanding, the job of the health professional is to decide not whether the complaint is valid but where to assign it: pain, nociception, suffering or pain behaviour (Loeser, 2005). Staff in the present study often repeated the mantra ‘pain is what the patient says it is’; a rephrasing of, “pain is whatever the experiencing person says it is, existing whenever he says it does” (McCaffery & Pasero, 1999). Perhaps, in the case of chronic pain in particular, ‘suffering is what the patient says it is’ would be a useful addition. This might facilitate an exploration of various contributors to suffering, such as the beliefs the patient has about their pain, including ideas about guilt, punishment, karma or whether pain is to be endured (Charon, 2005) as well the potentially traumatic experience of being in hospital. It has been stated that the aim of nursing interventions is not total relief from pain but enhanced comfort by easing distress, so that nurses adopt the role of ‘caretakers of suffering’ (Morse, Bottorff & Hutchinson, 1994). Staff in the present study recognised the potential value of knowing how pain functioned for their patients, but also felt under-resourced to utilise this knowledge, so that talking with patients fell down the list of priorities. One aim of the Wellbeing Checklist was to bring such thinking into focus.

Elucidating the under-acknowledged ways in which staff reduced patient distress was a key part of the feedback phase. Relatedly, educating patients about their pain was central to the concurrent hospital wide initiative. Evidence for the role of patient education is mixed. A meta-analysis of 191 studies showed an effect of pre-surgery patient education on post-surgery pain, wellbeing and anxiety (Devine,

1992), but the methodological rigour of many of the studies analysed has been questioned (Shuldham, 1998) and a more recent systematic review of 19 studies that investigated similar outcomes found improvements in patient knowledge but no effects on clinical outcomes (Ronco, Iona, Fabbro, Bulfone, Palese 2010). These mixed findings point to the idea that one important function of patient education is to reduce distress. In support of this, it has been demonstrated that the link between depression and pain is mediated by catastrophising, which, along with expected pain, is the biggest predictor of physical and emotional recovery in surgical patients (Bushnell, Čeko & Low, 2013; Lumley et al, 2011). Further, facilitating a shared understanding of pain (Ferrell, Dean, Grant & Coluzzi, 1995) handing control back to patients (Vallerand & Ferrell, 1995) and patients feeling believed (Seers & Friedli, 1996) are all themes that arose in the current study, which have also previously been highlighted as important factors in pain management. The implication is that patient education may be neither necessary nor sufficient to reduce patient distress and that many of the communicative techniques utilised by nursing staff in the current study may serve an equivalent function. This may be especially important in GI pain, where psychological contributors to pain are more salient (Drossman, 1999; Mayer & Tillisch, 2011; Rapps et al., 2008). The suggested Chronic Pain Passport (appendix q), by giving some control back to patients, could also be helpful in this respect.

Given the wealth of research advocating the important role of distress in pain management, it is important to examine the barriers that might have made it difficult for staff to act as 'the caretakers of suffering'. Much of the shift of the nursing staff members in the current study was governed by checklists and protocols, introduced ostensibly to ensure optimum patient care but at the same time removing a sense of agency and reducing the opportunity to spend time with patients - a phenomenon that may have increased over the past two decades as intimate tasks such as bedside bathing and hands-on care have been delegated to unlicensed staff

(Vallerand, Ferrell, & Fowler-Kerry, 2005). Relatedly, Menzies Lyth (1960) described various defences that served to protect staff members and institutions from the potentially overwhelming reality of tolerating patient distress. At ward level, she observed the elimination of decision-making via ritual task performance and the introduction of checks and counterchecks, which diluted a sense of ultimate responsibility. At higher levels, she argued, there was a deliberate obscurity of role, to allow for further avoidance of accountability. The parallels to the findings of the current study are clear.

Acknowledging under-utilised resources, predominantly at the nursing level, was a central message in the feedback phase of the current study. It can be seen why staff at higher levels may have been receptive to this message: firstly, it could facilitate the bolstering of existing resources without the need for much external input; and secondly, the recommendations were not particularly threatening at the institutional level. However, the normative tendency within a medical hierarchy, to pass responsibility upwards and delegate tasks downwards may have important implications for the uptake of recommendations. It has been previously found that many professional groups refused to accept pain management as a legitimate part of their role. An action research study across three UK hospitals demonstrated that communication and collaborative working were hindered by professional boundaries and role definitions. The introduction of specialist nursing teams meant that boundaries became blurred and the unintended role of the specialist nurses was to mediate between medical and nursing staff (Powell & Davies, 2012). Similarly, in the present study, difficulties in communication between ward-based staff and off-ward teams appeared to influence decisions about pain management. The pain team was responsible for delivering initiatives set by medical and managing professions to nursing staff on the ward and, with the consent of the head nurse, much of the handover of ethnographic findings took place with pain team members. It has been previously argued that specialist nurses can play a key role in increasing

research utilisation among nursing staff (Carroll et al., 1997). However, this may become problematic if, in the absence of a sense of ownership or agency, the recommendations of the current research are viewed by nurses as more checklists and guidelines issued by outside bodies, which are difficult to assimilate into daily practice - a concern raised by nursing staff in the feedback phase.

Wider Implications

Since the move to treat pain as the fifth vital sign, initiatives to improve pain management via the introduction of education and specialist pain teams have become widespread (Gordon et al., 2000; Kaasalainen et al., 2014; McDonnell et al., 2003). The uptake of educational interventions at the nursing level is mixed (Thompson & Stapley, 2011). Interventions that target decision-making and clinical judgment (Chan, 2013) or provide nursing staff with time and space to take ownership of any changes to pain management procedures (Brown and McCormack, 2011; Lewis et al., 2014) may facilitate more autonomy. It is important to consider the function of pain initiatives and examine whether they address more deeply entrenched barriers to the optimal management of patient, staff and institutional distress.

Checklists and outcome-monitoring forms are an ever growing phenomenon in the NHS, across mental and physical health. In the current study, there was a sense, when reflecting with staff on the Wellbeing Checklist, that it could be a useful prompt to raise awareness of factors outside pain that contribute to distress, which might be assimilated into nursing practice. However, there were concerns that it might be applied unthinkingly or become a substitute for real communication with patients. Practically, it may be the case nursing staff feel less able to spend time talking with patients, precisely because of an abundance of such protocols and checklists. Considering research demonstrating higher rates of complaints and

burn-out in nurses who displayed high levels of empathy (Watt-Watson, 1997) it is also important to consider the consequences of introducing a climate where more discussion with patients is encouraged, in the absence of removing any existing demands on nursing staff.

Limitations

Insight into staff-patient interactions was gained via observations, but eliciting patient experiences via interviews would have added substantial value to the study by affording the opportunity to hear patients' perspectives on the way pain is managed; particularly what chronic pain patients considered to be key barriers.

The heterogeneity of staff groups who took part meant that occasionally one or two staff members became spokespeople for their professional group. A more intensive focus on a homogenous sample, which occurred to some extent with nursing staff, might have facilitated the emergence of themes which reflected more personal rather than professional differences in attitudes toward pain management.

Several social factors arose in early codes but were not developed into core themes. Given the important role of families and caregivers in pain management and that research has shown differences in staff decision-making and staff-patient communication dependent upon ethnicity, age, and gender (Green, 2013), perhaps more emphasis could have been placed here.

Future research

Potentially important quantitative outcomes, such as length of stay in hospital and patient satisfaction, were outlined in the solutions document (appendix q). These went beyond the scope of the current study and were suggested as a way to measure any impact of the solutions suggested in the current study and the ongoing pain initiative. Perhaps, given the key role of nursing staff in pain management and the potential toll of maintaining close proximity to patient distress, an investigation

into quantitative indicators of nursing morale, perceived autonomy and wellbeing could elucidate mediating factors that influence the effectiveness of future pain management initiatives.

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Part 3: Critical Appraisal

Over the summer of 2014, I used an action research style of methodology to investigate barriers and potential solutions to effective pain management on a gastrointestinal ward in a university hospital. The study was undertaken as part of a Clinical Psychology doctorate. The research component of the doctorate involved a systematic review of literature on nursing educational interventions for pain management, a report on the empirical findings of the action research and this critical appraisal. A simultaneous but separate clinical component involved therapeutic work across a range of NHS settings over three years.

This paper will appraise two aspects of the research process, centred on two notes extracted from my research journal that are, hopefully, of use to researchers and clinicians working in similar fields. First, I will talk about the challenges involved in attempting to carry out action research with a dual role as clinician-researcher, while holding in mind both the standards of scientific rigour and an awareness that knowledge gleaned from relevant literature and clinical practice could helpfully contribute to the process of finding pain management solutions with staff. Second, I will discuss an excerpt of an interaction between a consultant gastroenterologist, a surgical patient and myself that illustrates potential barriers to psychological thinking in medical settings, the difficulties of maintaining objectivity as a researcher and the importance of support for researchers carrying out studies in clinical settings.

Over the course of the Clinical Psychology doctorate, therapeutic techniques from various theoretical approaches are taught in lectures, practiced with varying degrees of success on placements and gradually habituated, so that they eventually coalesce into something resembling an internalised set of therapeutic skills that can be applied to new settings. This move toward 'unconscious competence' is a familiar process that we, as trainees, were told of early in the doctorate (we were at the blissful stage of unconscious incompetence at that point).

As well as clinical lecture modules, we were also enrolled in a research lecture series, which taught us theory and skills, designed to prepare us for the rigour of the

thesis and further research after qualification. The lectures on quantitative approaches to research emphasised the importance of objectivity in data gathering and analysis - the researcher is a scientist who should seek as far as possible not to contaminate data with anything extraneous or confounding, including his or her own views, beliefs and feelings about participants - hence the double blind trial as a 'gold standard'. Qualitative approaches to research, we were taught, put the researcher in a more active and exposed position; particularly in studies that involve an ethnographic element, where the researcher interviews and observes participants in real-life settings so that s/he is at once looking in from outside, but also, unavoidably, part of the environment being studied. Unlike quantitative research, where quality is ensured via controlling the environment as strictly as possible, good quality qualitative studies accept the potentially confounding influence of the researcher on his or her research and attempt to be as explicit as possible about the whole process of the researcher's thinking during data gathering and analysis, including a reflection on what unique characteristics s/he might bring to the setting, so that the reader can decide what of value to the relevant field of research can be taken from the findings. These guidelines are also followed with action research, in which the researcher is actively involved in the observation of and reflection on processes in a particular setting, with participants who also act as co-researchers.

These steps to ensure quality were held in mind while carrying out the current study. In keeping with a key tenet of action research, staff members were involved in all stages of the project; from initial consultations that guided the direction of the research, to staff interviews and staff-patient observations during an ethnographic phase, through to feedback and reflection on themes and final handover of findings to pain team members. Comments on the role of the researcher at various stages of the study are included in the accompanying empirical paper. These include reflections on the ways in which habituated therapeutic skills in questioning and

listening were utilised during interviews to help create a safe environment with the aim of drawing out useful data.

I was not aware, at the time of data gathering, however, just how readily these skills were used during the interviews with clinical staff. It was not until the transcribed recordings were revisited that it became clear just how 'contaminated' the interviews were with the therapeutic techniques internalised over training. When carrying out the interviews, I had in mind the aim of eliciting the most useful responses from interviewees. Habituated clinical skills - demonstrating empathy, asking questions from a solution-focused approach and reframing responses, for example - were used automatically.

While reading the interview transcripts, the prevalence of clinical techniques became apparent. Also apparent was their utilisation for primarily data gathering rather than therapeutic purposes. Rather than opening up discussion with the aim of benefiting the person I was talking to, as is the case in therapeutic sessions, I was using these skills for another motive: to gather information so as to enrich my dataset. The interviews were 'semi-structured', so adjustments to the style of questioning, depending on the specific content of the interview, were to be expected. However, just how much the approach to interviews was informed by my clinical experience is worth considering when comparing research carried out by clinicians to that carried out by non-clinicians.

It is also worth considering the impact of 'opening up' difficult topics using therapeutic techniques on staff managing pain on the hospital wards. It might have been a positive experience for staff; providing them with a space that they would not usually have during their working week, to talk about difficult issues - but it might also have been a distressing and intrusive experience. Reflections with staff on the content of interviews, namely, themes relating to pain management barriers and solutions, formed a key part of the feedback stage, but little emphasis was given to the experience of being interviewed. Staff gave informed consent and were

provided with points of contact if they wished to discuss any aspects of the research process. However, it is important to consider in similar research the potential impact on clinical staff who did not receive any further support after the study of talking in depth with a researcher who is using clinical skills to open up emotive topics of discussion.

A more complex issue relating to my role as a clinician-researcher was raised during the feedback phase of the study, during which findings from the ethnographic phase were reflected on with staff with the aim of illustrating barriers to pain management and generating potential solutions. I was aware, during feedback sessions, of what might be clinically useful in relation to improving pain management from the ethnographic phase of the study, but also from literature on the subject gathered during my systematic review and from my own clinical experience. The following is from a process memo dated 1st November 2014:

“In these reflective sessions, when a question is asked, do I:

- Feedback what has come out of interviews
- Feedback what literature recommends
- Feedback what I know from my own clinical practice”

Each of these options would take the session in a different direction. I had in mind a key tenet of action research: to address a clinical problem. I also had in mind the fact that were it not for my literature review and clinical experience I would be left with no choice but to only feedback findings from the ethnographic phase - I wouldn't have had much else of value to add. This felt like it would have been a purer form of reflection, grounded in the earlier phases of the project. It felt jarring to instead step out of my role as researcher to add ideas that came from clinical experience or from the literature. For example, in one of the nursing feedback sessions we were talking about the importance of patients feeling believed when

they say they are in pain. This was a theme that had arisen during interviews with staff but I was also aware of its importance from previous clinical work with patients with medically unexplained symptoms and from literature on chronic pain. I brought all of this information to the ensuing discussion, attempting to differentiate themes that came from the ethnographic phase of the study from information learned elsewhere.

Here were nursing staff enquiring into what might help their patients. I was aware of what might be helpful. Not all of this came from the current research. It felt confusing to be in this situation. I was at the same time a participant in the process of drawing out clinically useful information, a researcher observing the process and a resource on pain management. The discussion with nursing staff during that feedback session ultimately entailed elements from my own experience as well as from ethnographic findings. A similar degree of entanglement of previous professional experience with research findings produced one of the overarching themes in the study: the under-acknowledgement of nursing resources due to the conflation of a patient's pain and his or her suffering versus the ways in which resources could be bolstered when pain and suffering were considered as separate but related. I am still not certain how much of this came from the data and how much I added. I do, however, feel confident that, because the ideas that generated pain management solutions were triangulated from clinical experience, literature and ethnographic findings, they are of a greater likelihood to be of clinical use than if they had arisen from any single source. This confusion must be a familiar occurrence in action research – it made me realise that as well as nursing staff being both participants and co-researchers, I was also a participant in the group. Recognising this phenomenon highlighted to me the truly collaborative nature of this type of research and the importance of being as transparent as possible about the role of the researcher at all stages.

The second excerpt also illustrates how one's own experiences can contribute to the direction of the research. The following is an extract of an observation, dated 27th July 2014, that was not included in the empirical paper:

A young Orthodox Jewish patient is sat on the edge of his hospital bed. Stood next to him is another man from his local community acting as an advocate. The advocate is asking the consultant gastroenterologist whether surgery is definitely the only way. The patient is clearly anxious, fiddling with his hair and fingers. The advocate talks about his own history of gastro-intestinal problems and how there was an alternative to surgery for him.

The consultant, who is very familiar with the patient is exasperated at having to explain something he has clearly explained several times before and frustrated about this patient going back and forward about surgery. It is clear the situation is serious and the consultant is aware that it is important that this patient has surgery soon.

After this exchange I commented to the consultant on how scared the patient looked and asked whether he thought the distress had been explored. The consultant was annoyed at my comments, made clear with a dismissive gesture that I was not aware of how long this had been going on and that the patient should be reassured about surgery by now. I felt I had intruded on an expert's prerogative, but was also aware of the consultant's belief that the patient should have been reassured which, for the consultant, trumped the fact that he had not been.

When I initially thought to include this excerpt it was with the intention of demonstrating how I had suggested an insight into a patient's distress and invited a reflection on the situation, which a defensive consultant had rebuffed. I would have then discussed how little time consultants have to reflect psychologically on what, beyond physical symptoms, are contributing to their patients' distress, how threatening a doubtful patient is to their position as experts and how 'giving reassurance' is often not differentiated from the patient actually being reassured. I

would have then discussed this as an especial difficulty in medical settings, where expressing uncertainty and feeling able to step down from an expert position is not functional for consultants with large caseloads who must make extremely precise clinical decisions in their field of expertise. Finally, I would have discussed how such decisions might become clouded if consultants were also required to consider the complex psychological components involved in making a decision to undertake surgery, but how it is not necessarily their role to weigh up these considerations.

These points of discussion are all relevant, but what had, more importantly, made this excerpt stick in my mind, and contributed to my desire to include it in the empirical paper, was the reaction of the consultant to my intrusion and the feelings of inferiority, clumsiness and frustration at not being listened to, which I had felt. Via the discussion points above, I would have been able to cast the consultant in an imperfect light by demonstrating that he hadn't considered all angles, and shown how insightful I had been, thus restoring a sense of personal integrity and importance that had been threatened by my interaction.

In psychodynamic approaches to therapy the above phenomena can be spoken of in terms of transference – the inappropriate repetition in the present of influences that are grounded in beliefs and ideas about oneself in relation to others, including what their intentions might be, which have been learned from previous experiences. It is imperative that clinicians practicing psychodynamically receive their own therapy so as to facilitate an ability to distinguish between that which the patient is bringing to the room – his or her experiences, emotions, prejudices, vulnerabilities and ways of relating – from the therapist's own contributions to the interaction. It is theorised that a therapist practicing psychodynamically who is unaware of what he may be bringing unknowingly into his interactions is more likely to play out or enact unhelpful patterns of interacting with his patients.

These ideas are not unique to psychodynamic approaches. Supervision is an integral part of our clinical work during training and after qualification. We bring to

supervision patients who make us feel stuck or angry or bored or hopeless— we bring cases that are not going the way we feel they should be. Part of the reason good supervision is so helpful is that it gives a space for a reflection on our own distress and what may be contributing to us feeling ‘stuck’ with our clinical work. Supervisors hear that we are struggling with something. This is thought about during supervision in a relatively contained way so that there is a feeling of being unburdened by the discussion. This facilitates clarity in thinking so that a good clinical decision can be more easily arrived at.

Each of us on the course also has a project supervisor. Trainees familiar with good project supervision will be aware of the feeling of a load being lifted when outstanding difficulties with the project are brought to research supervision, and of the clarity that can result once this load has been talked through - much in the same way that this occurs with good clinical supervision. It can be argued that part of what contributes to the feeling of ‘stuckness’ with research is not dissimilar to the difficulties experienced with patients, and that good project supervision allows a space to feel unburdened so that clearer decisions can be made.

Supervisors also provide practical support and expertise with research techniques that also reduce the load a trainee is carrying. However, it might be useful to give more acknowledgement to the way in which the researcher will inevitably be caught up in difficult interpersonal situations with participants and colleagues over the course of the research project. The majority of clinical research undertaken by trainees on our doctorate is carried out in hospitals, community centres, participants’ homes and university campuses. Much of it is undertaken to examine a psychological question. Even when healthy controls are being recruited it is often with a psychological premise, such as an investigation into addiction, as a comparison to a clinical group. The content of the studies is laden with material that is likely to be emotionally charged. This was definitely the case with my project, which was undertaken in a hospital ward and surrounding settings. I interviewed

busy consultants, stressed nurses, and concerned junior doctors, and observed interactions between clinical staff and patients who were often experiencing extreme discomfort.

During the research process, every interaction with a participant, a clinician who might refer participants or a supervisor will inevitably bring many of the same challenges that would be deemed important enough to reflect on in supervision if they had arisen during clinical work. The aim of the reflection would be to ensure that any personal impact of a distressing interaction on the therapist does not cloud or unhelpfully influence the direction of therapy.

It might be the case that if space is not made for the researcher to reflect on what s/he may be unknowingly bringing to his interactions with participants or to talk through the impact of any difficult interpersonal exchanges, the result might also be an unhelpful influence on the direction of research – a direction governed by unresolved interpersonal difficulties rather than one specified by the research question. Were it not for the opportunity for reflection privately and during project supervision, the excerpt above might well have been included in the empirical paper and discussed solely with reference to consultant barriers to pain management. Such barriers are no doubt an important aspect of pain management in hospital settings, but without the above reflection that entailed a shift of perspective on the relevance of the excerpt, it may have been given undue prominence in the empirical paper, not for its salience to the research question, but for its personal salience - because I was still burdened by it.

The feeling of 'stuckness' I experienced when initially thinking through my motivations for including the above extract, was similar to what I have felt during heated therapy sessions with patients, when something in the exchange has affected me so that my clinical judgement has become clouded. The importance of supervision and ongoing support with reflecting on difficulties to regain clarity is a key concept that not only applies to those training or practicing clinically but anyone

making important clinical decisions that can be clouded by unresolved interpersonal difficulties. The importance of reflecting on one's own position when carrying out qualitative research was made clear in our teaching, but it might be helpfully supplemented with some of the ideas outlined above that are normally reserved for clinical practice.

Appendices

Appendix A, full search terms specified by database

Embase Search 11.04.15

1. nursing education.mp. or nursing education/
2. limit 1 to (abstracts and english language and yr="2002 -Current")
3. limit 3 to (abstracts and english language and yr="2002 -Current")
4. staff education.mp. or staff training/
5. limit 5 to (abstracts and english language and yr="2002 -Current")
6. education program/ or education program*.mp.
7. limit 7 to (abstracts and english language and yr="2002 -Current")
8. 2 or 4 or 6 or 8
9. pain/ or pain.mp.
10. limit 10 to (abstracts and english language and yr="2002 -Current")
11. pain management.mp. or analgesia/
12. limit 12 to (abstracts and english language and yr="2002 -Current")
13. pain assessment.mp. or pain assessment/
14. limit 14 to (abstracts and english language and yr="2002 -Current")
15. pain measurement.mp. or pain measurement/
16. limit 16 to (abstracts and english language and yr="2002 -Current")
17. 11 or 13 or 15 or 17
18. acute pain.mp.
19. limit 19 to (abstracts and english language and yr="2002 -Current")
20. postoperative pain/ or postsurgical pain.mp.
21. limit 20 to (abstracts and english language and yr="2002 -Current")
22. postoperative pain.mp. or postoperative pain/
23. limit 23 to (abstracts and english language and yr="2002 -Current")
24. surgical pain.mp.
25. limit 25 to (abstracts and english language and yr="2002 -Current")
26. post-operative pain.mp.
27. limit 27 to (abstracts and english language and yr="2002 -Current")
28. post-surgical pain.mp.
29. limit 29 to (abstracts and english language and yr="2002 -Current")
30. 20 or 22 or 24 or 26 or 28 or 30
31. 9 and 18 and 31
32. acute disease.mp. or acute disease/
33. analgesia.mp. or analgesia/
34. health education.mp. or health education/
35. 2 or 4 or 6 or 8 or 35
36. 20 or 22 or 24 or 26 or 28 or 30 or 33
37. 11 or 13 or 15 or 17 or 34
38. 36 and 37 and 38
39. analges*.mp.
40. limit 40 to (abstracts and english language)
41. 11 or 13 or 15 or 17 or 34 or 41
42. 36 and 37 and 42

Medline search 11.04.15

- education, nursing/ or education, nursing, associate/ or education, nursing, baccalaureate/ or
1. education, nursing, continuing/ or education, nursing, diploma programs/ or education, nursing, graduate/ or nursing education research/
 2. limit 1 to (abstracts and english language and yr="2002 -Current")
 3. staff training.mp.
 4. limit 3 to (abstracts and english language and yr="2002 - current")
 5. staff education.mp.
 6. limit 5 to (abstracts and english language and yr="2002 -Current")
 7. Health Education/ or education program*.mp.
 8. limit 7 to (abstracts and english language and yr="2002 -Current")
 9. pain.mp. or Pain/

10. limit 9 to (abstracts and english language and yr="2002 -Current")
11. pain measurement.mp. or Pain Measurement/
12. limit 11 to (abstracts and english language and yr="2002 -Current")
13. pain assessment.mp.
14. limit 13 to (abstracts and english language and yr="2002 - current")
15. pain management.mp. or Pain Management/
16. limit 15 to (abstracts and english language and yr="2002 -Current")
17. Analgesia/ or analgesia.mp.
18. limit 17 to (abstracts and english language and yr="2002 -Current")
19. acute pain.mp. or Acute Pain/
20. limit 19 to (abstracts and english language and yr="2002 -Current")
21. postsurgical pain.mp.
22. limit 21 to (abstracts and english language and yr="2002 -Current")
23. post-surgical pain.mp.
24. limit 23 to (abstracts and english language and yr="2002 -Current")
25. postoperative pain.mp. or Pain, Postoperative/
26. limit 25 to (abstracts and english language and yr="2002 -Current")
27. post-operative pain.mp.
28. limit 27 to (abstracts and english language and yr="2002 -Current")
29. surgical pain.mp.
30. limit 29 to (abstracts and english language and yr="2002 -Current")
31. acute disease.mp. or Acute Disease/
32. limit 31 to (abstracts and english language and yr="2002 -Current")
33. 2 or 4 or 6 or 8
34. 10 or 12 or 14 or 16 or 18
35. 20 or 22 or 24 or 26 or 28 or 30 or 32
36. 33 and 34 and 35

CINAHL Search 11.04.15

S26 S7 AND S21 AND S25
 S25 S8 OR S9 OR S10 OR S11 OR S23 OR S24
 S24 analges*
 S23 (MH "Analgesia") OR "analgesia"
 S22 S7 AND S12 AND S21
 S21 S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20
 S20 post operative pain
 S19 "post-surgical pain"
 S18 "post surgical pain"
 S17 "post-operative pain"
 S16 "surgical pain"
 S15 (MH "Postoperative Pain") OR "postoperative pain"
 S14 (MH "Acute Disease") OR "acute disease"
 S13 (MH "Acute Pain Control (Saba CCC)") OR (MH "Acute Pain (Saba CCC)") OR "acute pain"
 S12 S8 OR S9 OR S10 OR S11
 S11 (MH "Pain Measurement") OR "pain measurement"
 S10 "pain assessment"
 S9 (MH "Pain Management (Iowa NIC)") OR "pain management"
 S8 (MH "Pain") OR "pain"
 S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6
 S6 (MH "Health Education") OR "health education"
 S5 (MH "Health Education") OR "health education"
 S4 "education program*"
 S3 (MH "Education, Nurse Anesthesia") OR "staff education"
 S2 (MH "Staff Development") OR "staff training"
 S1 (MH "Education, Nursing, Diploma Programs") OR (MH "Education, Nursing, Associate")

**Appendix B, Effective Public Health Practice Quality Assessment Tool
(EPHPP)**

Quality Assessment Tool for Quantitative Studies Dictionary



The purpose of this dictionary is to describe items in the tool thereby assisting raters to score study quality. Due to under-reporting or lack of clarity in the primary study, raters will need to make judgements about the extent that bias may be present. When making judgements about each component, raters should form their opinion based upon information contained in the study rather than making inferences about what the authors intended.

A) **SELECTION BIAS**

(Q1) Participants are more likely to be representative of the target population if they are randomly selected from a comprehensive list of individuals in the target population (score very likely). They may not be representative if they are referred from a source (e.g. clinic) in a systematic manner (score somewhat likely) or self-referred (score not likely).

(Q2) Refers to the % of subjects in the control and intervention groups that agreed to participate in the study before they were assigned to intervention or control groups.

B) **STUDY DESIGN**

In this section, raters assess the likelihood of bias due to the allocation process in an experimental study. For observational studies, raters assess the extent that assessments of exposure and outcome are likely to be independent. Generally, the type of design is a good indicator of the extent of bias. In stronger designs, an equivalent control group is present and the allocation process is such that the investigators are unable to predict the sequence.

Randomized Controlled Trial (RCT)

An experimental design where investigators randomly allocate eligible people to an intervention or control group. A rater should describe a study as an RCT if the randomization sequence allows each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. If the investigators do not describe the allocation process and only use the words 'random' or 'randomly', the study is described as a controlled clinical trial.

See below for more details.

Was the study described as randomized?

Score YES, if the authors used words such as random allocation, randomly assigned, and random assignment.

Score NO, if no mention of randomization is made. *Was the method of*

randomization described? Score YES, if the authors describe any method

used to generate a random allocation sequence.

Score NO, if the authors do not describe the allocation method or describe methods of allocation such as alternation, case record numbers, dates of birth, day of the week, and any allocation procedure that is entirely transparent before assignment, such as an open list of random numbers of assignments.

If NO is scored, then the study is a controlled clinical trial.

Was the method appropriate?

Score YES, if the randomization sequence allowed each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. Examples of appropriate approaches include assignment of subjects by a central office unaware of subject characteristics, or sequentially numbered, sealed, opaque envelopes.

Score NO, if the randomization sequence is open to the individuals responsible for recruiting and allocating participants

or providing the intervention, since those individuals can influence the allocation process, either knowingly or unknowingly.

If NO is scored, then the study is a controlled clinical trial.

Controlled Clinical Trial (CCT)

An experimental study design where the method of allocating study subjects to intervention or control groups is open to individuals responsible for recruiting subjects or providing the intervention. The method of allocation is transparent before assignment, e.g. an open list of random numbers or allocation by date of birth, etc.

Cohort analytic (two group pre and post)

An observational study design where groups are assembled according to whether or not exposure to the intervention has occurred. Exposure to the intervention is not under the control of the investigators. Study groups might be nonequivalent or not comparable on some feature that affects outcome.

Case control study

A retrospective study design where the investigators gather 'cases' of people who already have the outcome of interest and 'controls' who do not. Both groups are then questioned or their records examined about whether they received the intervention exposure of interest.

Cohort (one group pre + post (before and after)

The same group is pretested, given an intervention, and tested immediately after the intervention. The intervention group, by means of the pretest, act as their own control group.

Interrupted time series

A time series consists of multiple observations over time. Observations can be on the same units (e.g. individuals over time) or on different but similar units (e.g. student achievement scores for particular grade and school). Interrupted time series analysis requires knowing the specific point in the series when an intervention occurred.

C) CONFOUNDERS

By definition, a confounder is a variable that is associated with the intervention or exposure and causally related to the outcome of interest. Even in a robust study design, groups may not be balanced with respect to important variables prior to the intervention. The authors should indicate if confounders were controlled in the design (by stratification or matching) or in the analysis. If the allocation to intervention

and control groups is randomized, the authors must report that the groups were balanced at baseline with respect to confounders (either in the text or a table).

D) B L I N D I N G

(Q1) Assessors should be described as blinded to which participants were in the control and intervention groups. The purpose of blinding the outcome assessors (who might also be the care providers) is to protect against detection bias.

(Q2) Study participants should not be aware of (i.e. blinded to) the research question. The purpose of blinding the participants is to protect against reporting bias.

E) DATA COLLECTION METHODS

Tools for primary outcome measures must be described as reliable and valid. If 'face' validity or 'content' validity has

been demonstrated, this is acceptable. Some sources from which data may be collected are described below:

Self reported data includes data that is collected from participants in the study (e.g. completing a questionnaire, survey, answering questions during an interview, etc.).

Assessment/Screening includes objective data that is retrieved by the researchers. (e.g. observations by investigators).

Medical Records/Vital Statistics refers to the types of formal records used for the extraction of the data.

Reliability and validity can be reported in the study or in a separate study. For example, some standard assessment tools have known reliability and validity.

F) WITHDRAWALS AND DROP-OUTS

Score **YES** if the authors describe BOTH the numbers and reasons for withdrawals and drop-outs. Score **NO** if either the numbers or reasons for withdrawals and drop-outs are not reported.

The percentage of participants completing the study refers to the % of subjects remaining in the study at the final data collection period in all groups (i.e. control and intervention groups).

G) INTERVENTION INTEGRITY

The number of participants receiving the intended intervention should be noted (consider both frequency and intensity).

For example, the authors may have reported that at least 80 percent of the participants received the complete intervention. The authors should describe a method of measuring if the intervention was provided to all participants the same way. As well, the authors should indicate if subjects received an unintended intervention that may have influenced the outcomes. For example, co-intervention occurs when the study group receives an additional intervention (other than that intended). In this case, it is possible that the effect of the intervention may be over-estimated. Contamination refers to situations where the control group accidentally receives the study intervention. This could result in an under-estimation of the impact of the intervention.

H) ANALYSIS APPROPRIATE TO QUESTION Was the quantitative analysis appropriate to the research question being asked?

An intention-to-treat analysis is one in which all the participants in a trial are analyzed according to the intervention to which they were allocated, whether they received it or not. Intention-to-treat analyses are favoured in assessments of effectiveness as they mirror the noncompliance and treatment changes that are likely to occur when the intervention is used in practice, and because of the risk of attrition bias when participants are excluded from the analysis.

Component Ratings of Study:

For each of the six components A – F, use the following descriptions as a roadmap.

A) SELECTION BIAS

Strong: The selected individuals are very likely to be representative of the target population (Q1 is 1) **and** there is greater than 80% participation (Q2 is 1).

Moderate: The selected individuals are at least somewhat likely to be representative of the target population (Q1 is 1 or 2); **and** there is 60 - 79% participation (Q2 is 2). 'Moderate' may also be assigned if Q1 is 1 or 2 and Q2 is 5 (can't tell).

Weak: The selected individuals are not likely to be representative of the target population (Q1 is 3); **or** there is less than 60% participation (Q2 is 3) **or** selection is not described (Q1 is 4); and the level of participation is not described (Q2 is 5).

B) DESIGN **Strong:** will be assigned to those articles that described RCTs and CCTs.

Moderate: will be assigned to those that described a cohort analytic study, a case control study, a cohort design, or an interrupted time series.

Weak: will be assigned to those that used any other method or did not state the method used.

C) CONFOUNDERS

Strong: will be assigned to those articles that controlled for at least 80% of relevant confounders (Q1 is 2); **or** (Q2 is 1). **Moderate:** will be given to those studies that controlled for 60 – 79% of relevant confounders (Q1 is 1) **and** (Q2 is 2).

Weak: will be assigned when less than 60% of relevant confounders were controlled (Q1 is 1) **and** (Q2 is 3) **or** control of confounders was not described (Q1 is 3) **and** (Q2 is 4).

D) BLINDING

Strong: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **and** the study participants are not aware of the research question (Q2 is 2).

Moderate: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **or** the study

participants are not aware of the research question (Q2 is 2); **or** blinding is not described (Q1 is 3 and Q2 is 3).

Weak: The outcome assessor is aware of the intervention status of participants (Q1 is 1); **and** the study participants are aware of the research question (Q2 is 1).

E) DATA COLLECTION METHODS

Strong: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have been shown to be reliable (Q2 is 1).

Moderate: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have not been shown to be reliable (Q2 is 2) **or** reliability is not described (Q2 is 3).

Weak: The data collection tools have not been shown to be valid (Q1 is 2) **or** both reliability and validity are not described (Q1 is 3 and Q2 is 3).

F) WITHDRAWALS AND DROP-OUTS - a rating of:

Strong: will be assigned when the follow-up rate is 80% or greater (Q2 is 1).

Moderate: will be assigned when the follow-up rate is 60 – 79% (Q2 is 2) **OR** Q2 is 5 (N/A).

Weak: will be assigned when a follow-up rate is less than 60% (Q2 is 3) or if the withdrawals and drop-outs were not described (Q2 is 4).

Appendix C, quality ratings using EPHPP, with discrepancies between raters

Table: Author(s) (year)	Composite EPHPP Quality Ratings GD/AW (Agreed)	Global EPHPP Ratings GD/AW (Agreed)	Discrepancies
	A1- Ppts Representative? A2-% agreed to participate? B-Study Design C1-important differences? C2 Controlled for? D1-Assessors aware? D2-Ppt aware? E1-Valid Tool? E2-Reliable Tool? F1-Withdrawals reported? F2- % completing?	A=Selection B=Design C=Confounders D=Blinding E=Data collection measures F=Drop-outs Global Rating	Discussion on discrepancies included below
Abdalahim et al. (2011)	A1= 2 A2= 1 B = 5 C1= n/a C2= n/a D1= 3 D2= 1/3 E1= 1/3 (1) E2= 1/1 (1) F1= 3/4 F2= 1/5	A Total= 1 B Total= 2 C Total= 2 D Total= 2 E Total= 1/2 (1) F Total= 2 Global= 1	E: AW and GD disagreed on reliability and validity. Agreed that if measure is previous mentioned as valid, scored as valid; If binary measure of assessment, scored as reliable F: Agreed that F1=4 f2=5 for all studies except where there is potential for nurse/pt to drop out; Scored n/a where data collected from ppt at single time point; Scored can't tell when not reported
Elshamy & Ramzy (2011)	A1= 3 A2= 5 B = 5 C1= 2 C2= n/a D1= 3/1 D2= 1 E1= 1/3 E2= 3 F1= 1/4/ F2= 1/5	A Total= 3 B Total= 2 C Total= 1 D Total= 3/2 (3) E Total= 2/3 (2) F Total= 1/2 Global= 3/2 (3)	Global rating= Strong D =Discussion: GD thought researchers assessed outcomes and were therefore ware of the intervention. AW agreed E=as above F=as above

Hansson Fridlund & Hallström (2006)	A1=2 A2=2 B=5 C1=1 C2=1 D1=3 D2=3 E1=1 E2=1 F1=1 F2=1	A Total= 2 B Total= 2 C Total= 1 D Total= 2 E Total= 1 F Total= 1 Global= 1	Global rating=Weak No rating from AW Global Rating=strong
Hong & Lee E (2014)	A1=2 A2=2 B=3 C1=2 C2=n/a D1=1 D2=1 E1=1 E2=1 F1=2 F2=2	A Total= 2 B Total= 2 C Total= 1 D Total= 3 E Total= 1 F Total= 2 Global= 2	No rating from AW Global Rating=moderate
Innis et al. (2004)	A1=1 2=1 B=5 C1=3 C2=n/a D1=2 D2=2 E1=1 e2=1 F1=4 F2=5	A Total= 1 B Total= 2 C Total= 3 D Total= 3 E Total= 1 F Total= 2 Global= 3	No rating from AW Global Rating=weak
Lin, Chiang, Chiang & Chen (2008)	A1= 4 A 2= 5 B= 1/2 C1=2 C2= n/a D1= 3 D2= 3 E1= 3/1 E2= 3 /1 F1= 4 F2= 5	A Total=3 B Total= 1 C Total= 1 D Total= 3 E Total= 3/1 F Total= 1 Global= 2	B= Discussion: GD thought not full randomisation. AW agreed E=as above F=as above Global rating = moderate
Mac Lellan (2004)	A1=2 A2=5 B=2/3 (3) C1=1 C2=1 D1=3 D2=3 E1=1 E2=1 F1=4 F2=5	A Total= 2 B Total= 1/2 (2) C Total= 1 D Total= 2 E Total= 1 F Total= 2 Global= 1	B=Discussion: AW differentiated this study from Lin, for being less rigid. GD agreed. Global rating = strong
Maunsaiyat, Akayipat & Phonsayom (2009)	A1=3 A 2=5 B = 5 C1= 2 C2= n/a D1= n/a /1 (1) D2= 1 E1= 1/3 E2= 3/3 F1= 3/4 F2= 1/5	A Total=3 B Total=2 C Total= 1 D Total= 2/3 (3) E Total= 2/3 (2) F Total= 2 Global= 2/3 (3)	D=as above E=as above F=as above Global rating =weak

Michaels, Hubbartt, Carroll & Hudson-Barr (2007)	A1=4 2=5 B=3 C1=2 C2=1 D1=2 D2=2 E1=1 E2=1 F1=4 F2=5	A Total= 3 B Total= 2 C Total= 1 D Total= 1 E Total= 1 F Total= 2 Global= 2	Global rating =Moderate
Morrison et al. (2007)	A1= 2 A2= 3 B=3 C1= 2 C2= 1 D1=2 D2=3 E1=3 E2=3/1 F1=1/4 F 2=1/5	A Total= 3 B Total=2/2 C Total=1/1 D Total=2/2 ETotal=3/2 (2) F Total=1/2 Global= 3/2	Discussion: AW thought adequate discussion of reliability on pg3. GD agreed E=as above F=as above Global rating = moderate
Ravaud et al. (2004)	A1=1 A2=5 B=1 C1=1 C2=4 D1=2 D2=3 E1=3 E2=1 F1=4 F2=5	A Total= 1 B Total= 1 C Total= 3 D Total= 2 E Total= 2 F Total= 2 Global= 2	Global rating = moderate
Zhang, Hsu Li, Wang, Huang (2007)	A1=2 2=1 B=2 C1=2 C2=N/A D1=3 D2=3 E1=1 E2=1 F1=1 F2=1	A Total= 2 B Total= 1 C Total= 1 D Total= 2 E Total= 1 F Total= 1 Global= 1	Global Rating=strong

Appendix D, table of excluded studies

Authors	Reason for Exclusion
Bardiau, Taviaux, Albert, Boogaerts, Stadler (2003)	Unable to distinguish impact of nursing intervention from broader intervention with other clinical staff
Cadavid-Puentes et al. (2013)	Medication protocol changed
Coulthard, Patel, Bailey, Armstrong (2014)	Unable to distinguish impact of nursing intervention from broader intervention with other clinical staff
Decosterd et al. (2007)	Unable to distinguish impact of nursing intervention from broader intervention with other clinical staff
Ene, Nordberg, Bergh, Johansson & Sjoström (2008)	Medication protocol changed
Gregory & Jackson (2004)	Medication protocol changed
Haller, Agoritsas, Luthy, Piguet, Griesser & Perneger (2011)	Unable to distinguish impact of nursing intervention from broader intervention with other clinical staff
Hauser, Dyer, Pepler & Rolfe (2014)	Unable to distinguish impact of nursing intervention from broader intervention with other clinical staff
Karlsten, Ström & Gunningberg (2005)	Unable to distinguish impact of nursing intervention from broader intervention with other clinical staff
Long et al. (2010)	Only qualitative report of change, no quantitative clinical outcomes
O'Connor (2003)	No educational intervention; introduction of a new documentation tool only
Narasimhaswamy et al. (2006)	Medication protocol changed
Noe et al. (2002)	Unable to distinguish impact of nursing intervention from broader intervention with other clinical staff
Silva (2013)	Medication protocol changed
van Gulik et al. (2010)	Medication protocol changed

Appendix E, theoretical domains, component constructs, and eliciting questions for investigating the implementation of evidence-based practice from Michie et al. (2005)

Domains	Constructs	Interview questions
(1) Knowledge	Knowledge	Do they know about the guideline?
	Knowledge about condition/scientific rationale	What do they think the guideline says?
	Schemas+mindsets+illness representations	What do they think the evidence is?
	Procedural knowledge	Do they know they should be doing x? Do they know why they should be doing x?
(2) Skills	Skills	Do they know how to do x?
	Competence/ability/skill assessment	How easy or difficult do they find performing x to the required standard in the required context?
	Practice/skills development	
	Interpersonal skills	
(3) Social/ professional role and identity	Coping strategies	
	Identity	What is the purpose of the guidelines?
	Professional identity/boundaries/role	What do they think about the credibility of the source?
	Group/social identity	Do they think guidelines should determine their behaviour?
	Social/group norms Alienation/organisational commitment	Is doing x compatible or in conflict with professional standards/identity? (prompts: moral/ethical issues, limits to autonomy) Would this be true for all professional groups involved?
(4) Beliefs about capabilities	Self-efficacy Control—of behaviour and material and	How difficult or easy is it for them to do x? (prompt re. internal and external capabilities/constraints)
	social environment	What problems have they encountered?
	Perceived competence	What would help them?
	Self-confidence/professional confidence	How confident are they that they can do x despite the difficulties?
	Empowerment	How capable are they of maintaining x?
	Self-esteem	How well equipped/comfortable do they feel to do x?
	Perceived behavioural control	
	Optimism/pessimism	
	Outcome expectancies Anticipated regret	
(5) Beliefs about consequences	Appraisal/evaluation/review	What do they think will happen if they do x? (prompt re themselves, patients, colleagues and the organisation; positive and negative, short term and long term consequences)

(6) Motivation and goals	Consequents	What are the costs of x and what are the costs of the consequences of x?
	Attitudes	What do they think will happen if they do not do x? (prompts)
	Contingencies	Do benefits of doing x outweigh the costs?
	Reinforcement/punishment/consequences	How will they feel if they do/don't do x? (prompts)
	Incentives/rewards	Does the evidence suggest that doing x is a good thing?
	Beliefs	
	Unrealistic optimism	
	Salient events/sensitisation/critical incidents	
	Characteristics of outcome expectancies—physical, social, emotional;	
	Sanctions/rewards, proximal/distal, valued/not valued, probable/improbable, salient/not salient, perceived risk/threat	
	Intention; stability of intention/certainty of intention	How much do they want to do x?
	Goals (autonomous, controlled)	How much do they feel they need to do x?
	Goal target/setting	Are there other things they want to do or achieve that might interfere with x?
	Goal priority	Does the guideline conflict with others?
(7) Memory, attention and decision processes	Intrinsic motivation	Are there incentives to do x?
	Commitment	
	Distal and proximal goals	
	Transtheoretical model and stages of change	
	Memory	Is x something they usually do?
	Attention	Will they think to do x?
(8) Environmental context and resources	Attention control	How much attention will they have to pay to do x?
	Decision making	Will they remember to do x? How?
		Might they decide not to do x? Why? (prompt: competing tasks, time constraints)
	Resources/material resources (availability and management)	To what extent do physical or resource factors facilitate or hinder x?
	Environmental stressors	Are there competing tasks and time constraints?
	Person x environment interaction	Are the necessary resources available to those expected to undertake x?
(9) Social influences	Knowledge of task environment	
	Social support	To what extent do social influences facilitate or hinder x? (prompts: peers, managers, other professional groups, patients, relatives)
	Social/group norms	

	Organisational development	Will they observe others doing x (i.e. have role models)?
	Leadership	
	Team working	
	Group conformity	
	Organisational climate/culture	
	Social pressure	
	Power/hierarchy	
	Professional boundaries/roles	
	Management commitment	
	Supervision	
	Inter-group conflict	
	Champions	
	Social comparisons	
	Identity; group/social identity	
	Organisational commitment/alienation	
	Feedback	
	Conflict—competing demands, conflicting roles	
	Change management	
	Crew resource management	
	Negotiation	
	Social support: personal/professional/organisational, intra/interpersonal, society/community	
	Social/group norms: subjective, descriptive, injunctive norms	
	Learning and modelling	
(10) Emotion	Affect	Does doing x evoke an emotional response? If so, what?
	Stress	To what extent do emotional factors facilitate or hinder x?
	Anticipated regret	How does emotion affect x?
	Fear	
	Burn-out	
	Cognitive overload/tiredness	
	Threat	
	Positive/negative affect	
	Anxiety/depression	
(11) Behavioural regulation	Goal/target setting	What preparatory steps are needed to do x? (prompt re individual and organisational)
	Implementation intention	Are there procedures or ways of working that encourage x?
	Action planning	
	Self-monitoring	
	Goal priority	
	Generating alternatives	
	Feedback	
	Moderators of intention-behaviour gap	
	Project management	
	Barriers and facilitators	
(12) Nature of the behaviours	Routine/automatic/habit	What is the proposed behaviour (x)?

Breaking habit	Who needs to do what differently when, where, how, how often and with whom?
Direct experience/past behaviour	How do they know whether the behaviour has happened?
Representation of tasks	What do they currently do?
Stages of change model	Is this a new behaviour or an existing behaviour that needs to become a habit?
	Can the context be used to prompt the new behaviour? (prompts: layout, reminders, equipment)
	How long are changes going to take?
	Are there systems for maintaining long term change?

Appendix F, Staff perceptions and expectations questionnaire, adapted from Williamson, Bellman, & Webster (2011)

- 1 What are the key issues for you regarding the management of pain in GI patients?
- 2 What outcomes of a study into pain management are important to you?
- 3 What do you think works well in current pain management practices?

(you can use these areas as guidance: for patients, for you, within the team, within the organisation?)
- 4 What do you think are the problems with current pain management practices?
- 5 How would you like to see pain management processes improved ?
 - For you?
 - For patients?

 - Is there anything else you would like to add?

Appendix G, ethical approval documents

Joint Research Office

Office Location:
1st Floor Maple House
149 Tottenham Court Road
London W1T 7DN

Postal
Gov
London W

Websites: www.uclh.nhs.uk; www.ucl.ac.uk; www.ucl.ac.uk/jro

FINAL R&D APPROVAL NHS PERMISSION

10/04/2014

Dr Amanda Williams
University College London
Sub-Department of Clinical Health Psychology
1-19 Torrington Place
London WC1E 6BT

Dear Dr Williams

Project ID: 13/0732 (Please quote in all correspondence)
REC Ref: 5343/001
Title: An investigation into barriers to effective pain management on a Gastro-Intestinal Ward at UCLH

Thank you for registering the above study with the Joint Research Office (UCLH site). I am pleased to inform you that your study now has local R&D approval (NHS permission) to proceed and recruit participants at University College London Hospitals NHS Foundation Trust subject to sponsor confirmation.

Please note that all documents received have been reviewed and this approval is granted on the basis of the key documents provided which are ethically approved by the Research Ethics Committee:

Document	Date
REC approval and REC approved documents	13/03/2014

As Principal Investigator you are required to ensure that your study is conducted in accordance with the requirements on the attached sheet. These include the conditions of your NHS permission.

Do not hesitate to contact a member of the team should you have any queries. Yours sincerely


P.P. Professor Monty Mythen
Director of Research and
Development UCL/UCLH/Royal
Free Joint Research Office



Dr Amanda Williams
Department of Clinical, Educational and Health Psychology
UCL

13 March 2014
Dear Dr Williams

Notification of Ethical Approval
Project ID: 5343/001: An investigation into barriers to effective pain management on a Gastro-Intestinal Ward at a University Hospital

I am pleased to confirm that in my capacity as Chair of the UCL Research Ethics Committee I have approved your study for the duration of the project i.e. until March 2015.

Approval is subject to the following conditions:

1. You must seek Chair's approval for proposed amendments to the research for which this approval has been given. Ethical approval is specific to this project and must not be treated as applicable to research of a similar nature. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing the 'Amendment Approval Request Form'.

The form identified above can be accessed by logging on to the ethics website homepage: <http://www.grad.ucl.ac.uk/ethics/> and clicking on the button marked 'Key Responsibilities of the Researcher Following Approval'.

2. It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. Both non-serious and serious adverse events must be reported.

Reporting Non-Serious Adverse Events

For non-serious adverse events you will need to inform Helen Dougal, Ethics Committee Administrator (ethics@ucl.ac.uk), within ten days of an adverse incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Chair or Vice-Chair of the Ethics Committee will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Reporting Serious Adverse Events

The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator immediately the incident occurs. Where the adverse incident is unexpected and serious, the Chair or Vice-Chair will decide whether the study should be terminated pending the opinion of an independent expert. The adverse event will be considered at the next Committee meeting and a decision will be made on the need to change the information leaflet and/or study protocol.

On completion of the research you must submit a brief report (a maximum of two sides of A4) of your findings/concluding comments to the Committee, which includes in particular issues relating to the ethical implications of the research.

With best wishes for the research.

Yours sincerely

Professor John Foreman
Chair of the UCL Research Ethics Committee

Appendix H, participant information sheet



Research Department of Clinical,

Educational & Health Psychology

University College London

Gower Street

London

WC1E 6BT

Tel: 020 7679 1897

Fax: 020 7916 1989

Website: <https://www.ucl.ac.uk/cehp/>

UNIVERSITY COLLEGE LONDON HOSPITAL NHS TRUST

Participant Information Sheet

Version: 1

Date: 15.11.13

Project ID:

Study title

An investigation into barriers to effective pain management on a Gastro-Intestinal Ward at a University College London Hospital (UCLH)

(Student Research Project)

1. Invitation paragraph

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

2. What is the purpose of the study?

Pain is one of the core vital signs to be assessed on nursing rounds in the UK. However, research has shown there are often barriers to the best pain management, especially when patients have chronic pain or pain with an uncertain cause. We are hoping to study the processes involved in pain management on gastro-intestinal wards at UCLH. By observing nursing rounds, interviewing staff and discussing difficulties and barriers we hope that, together with staff on the wards, we can implement changes that lead to improvements in pain management.

3. Why have I been chosen?

You have been chosen because you are a member of staff on a gastro-intestinal ward at UCLH. You have experience in assessing and managing pain, and can provide invaluable insights into the processes and barriers of pain management on the wards. We will be asking all of your colleagues on the ward to take part. There are various ways you can take part - these will be explained more in Section 6, below.

4. Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This study is completely independent of your employment contract and a decision to withdraw at any time, or a decision not to take part, will not affect your employment.

5. What is involved in the study?

This study will involve a number of different stages, so there are a number of ways you can get involved. We are interested in working alongside staff members and hearing their opinions, rather than simply gathering information. We hope to work with staff to identify areas that are important for pain management and use staff input to guide the study. Some of the ways that you can get involved will simply involve being observed or interviewed, but other ways will involve you working alongside the researchers and taking an active role in the way the study goes:

- a. Identifying the 'research propositions' in group discussion and/or using Staff Perceptions and Expectations questionnaire. The first stage of the study will involve meeting with staff and identifying the areas that you think are important for improving pain management. We want to investigate what you think will make a difference to pain management. We hope to hear from as many staff as possible at this initial stage and if you agree to be involved you can either attend a group discussion of around 30 minutes, or you can fill in a questionnaire that asks your opinions – this will take no more than 10 minutes. The research propositions drawn from both of these will guide the remainder of the study.
- b. Observation of nursing practice, whether interacting with patient or with other staff. You may consent to have portions of your shift observed over a number of weeks. Flexibility to accommodate needs will be essential – we can agree times to observe a shift in advance, or ask staff on shift whether they would be willing to take part on an *ad hoc* basis. The aim here is not to recruit a certain number of participants but rather to get an impression of processes on the ward over a 24 hour period. If you consent to this part of the study you will need to make clear to patients who you interact with during the observation that a researcher is accompanying you, that they are free to refuse to have your interaction observed, and that if they agree the interaction will be tape-recorded. You can make this clear to them with the following statement: *"The person with me today is doing research into procedures on the ward. He/She will be recording our interaction but is only interested in observing me for the research. None of your information will be used in the study. Nonetheless please let me know if you would prefer not to have our interaction observed"*. When completing your notes, patient verbal consent or refusal to consent to be observed by the researcher should be recorded in patient records along with documentation of the interaction.
- c. Interview of up to 45 minutes to get an impression of how staff understand what happens, almost in real-time, from the moment a member of staff approaches a patient to ask about pain, through to the eventual decision about pain management.
- d. Focus group on beliefs about and barriers to pain management. This would last 90 minutes, with 6-12 participants, and there would be several to accommodate needs.
- e. Reflective sessions where we report back on what we find from observing, focus groups and interviews, and reflect on what changes may be helpful to implement. These sessions will take place in small groups and last anywhere from 20 minutes to one hour, with staff attending more than one if they wish

You will see, on the consent form attached to this information sheet, the opportunity to agree to any of these stages: you can select all options, several options or none at all. You can change your mind at any time - meaning you can choose to take part in other parts of the study at a later date, or choose to stop taking part in parts of the study you have agreed to previously.

6. What are known risks or downsides of the study?

Depending upon your level of involvement you will have to dedicate some of your working day or outside hours to taking part. This would be agreed by the head nurses on the ward who will also be taking an active role in the research.

7. What are the possible benefits of taking part?

A recent study at UCLH has identified pain management as an area in which both staff and patients feel there could be improvements. By taking part you have the opportunity to implement changes that could improve patient and staff satisfaction with the way pain is managed. This may lead to immediate benefits for you, as a member of staff on the gastro-intestinal wards, and to future benefits for staff and patients at UCLH.

8. The information held about the research subject

In compliance with the Data Protection Act 1998, all information which is collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the hospital will have all identifiable information (such as name and e-mail) removed so that you cannot be recognised from it

Tape-recorded data from interviews and focus groups will be anonymised - meaning all identifiable information will be removed - and the resulting transcripts will be used for research purposes only.

9. What if something goes wrong?

If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated by researchers or other staff members due to your participation in the research, National Health Service or UCL complaints mechanisms are available to you. Please ask your researcher if you would like more information on this. In the unlikely event that you are harmed by taking part in this study, compensation may be available. If you suspect that the harm is the result of the Sponsor's (University College London) or the hospital's negligence then you may be able to claim compensation. After discussing with your researcher, please make the claim in writing to the Amanda Williams who is the Chief Investigator for the research and is based at University College London. The Chief Investigator will then pass the claim to the Sponsor's Insurers, via the Sponsor's office. You may have to bear the costs of the legal action initially, and you should consult a lawyer about this.

You can also liaise with an advice service at University College Hospital. If you would prefer to write by post the addresses are:

PALS	PALS
Ground Floor Atrium	Box 25
University College Hospital	National Hospital for Neurology and Neurosurgery
235 Euston Road	Queen Square
London NW1 2BU	London WC1N 3BG

Or you can email PALS@uclh.nhs.uk

10. What will happen to the results of the research study?

The results of the study will be retained and written up as part of doctoral research completed at University College London (UCL). The UCL Records Office maintains archived records in a safe and secure off site location. Access to stored records is strictly controlled. We also hope to publish the results of this study in a medical journal. You can contact the researchers if you would like to receive a copy of any published articles. We will also use the results to implement local changes at UCLH, working with the Making a Difference Together team. Please contact us if you would like to play an active role in this stage of the study.

11. Who is organising and funding the research?

This study is being organised and funded by University College London.

12. Withdrawal from the project

Your participation in the study is entirely voluntary. You are free to decline to enter or to withdraw from the study any time without having to give a reason. All personal information regarding will be treated as strictly confidential and will only be used for the purposes of the study. Participation in this study will in no way affect your legal rights or employment.

13. Who has reviewed the study?

This study has been reviewed by the UCL Doctorate in Clinical Psychology Research Committee.

14. Contact for further information

For further information you can contact student researchers Gareth Drake (g.drake.12@ucl.ac.uk) and Rebecca Ellis (r.ellis.12@ucl.ac.uk), or Principal Investigator, Amanda Williams (Amanda.williams@ucl.ac.uk; 02076791608)

Please feel free to discuss anything that is unclear with the researcher. This copy of the information sheet is for you to keep.

Appendix I, participant consent form



Research Department of Clinical,

Educational & Health Psychology

University College London

Gower Street

London

WC1E 6BT

Tel: 020 7679 1897

Fax: 020 7916 1989

Website: <https://www.ucl.ac.uk/cehp/>

Centre Number:
number:

UCLH Project ID

Participant Identification Number for this study:

Form version: 1

Date: 15.11.13

CONSENT FORM

Title of project: **An investigation into barriers to effective pain management on a Gastro-Intestinal Ward**

(Student Research Project)

Name of Principal investigator: **Amanda Williams**

initial box

Please

1. I confirm that I have read and understood the information sheet dated 15.11.13 (version 1) for the above study and have had the opportunity to ask questions.

☐

2. I confirm that I have had sufficient time to consider whether or not want to be included in the study

☐

3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my legal rights or employment being affected

☐

Continued on next page/

4. I agree to take part in the above study.

☐

You can choose to take part in one, several or all parts of the study. Please indicate below by ticking, which aspects of the study you would like to take part in (remember, you are free to change your mind or withdraw at any point):

☐☐

- a. Initial consultation to generate goals of research
- b. Observations of practice – prior to which I agree to inform patients that our interaction will be recorded, that they are free to refuse and that their information will not be used.
- c. Interview
- d. Focus group
- e. Reflective feedback sessions

☐☐☐

1 to be kept as part of the study documentation,

Centre Number:
number:

UCLH Project ID

Participant Identification Number for this study:

Form version: 1

CONSENT FORM

Title of project: **An investigation into barriers to effective pain management on a Gastro-Intestinal Ward**

Name of Principal investigator: **Amanda Williams**

Name of participant

Date

Signature

Name of Person taking consent

Date

Signature

(if different from researcher)

Researcher (to be contacted

Date

Signature

if there are any problems)

Comments or concerns during the study

If you have any comments or concerns you may discuss these with the investigator. If you wish to go further and complain about any aspect of the way you have been approached or treated during the course of the study, you should write or get in touch with the Complaints Manager, UCL hospitals. Please quote the UCLH project number at the top of this consent form.

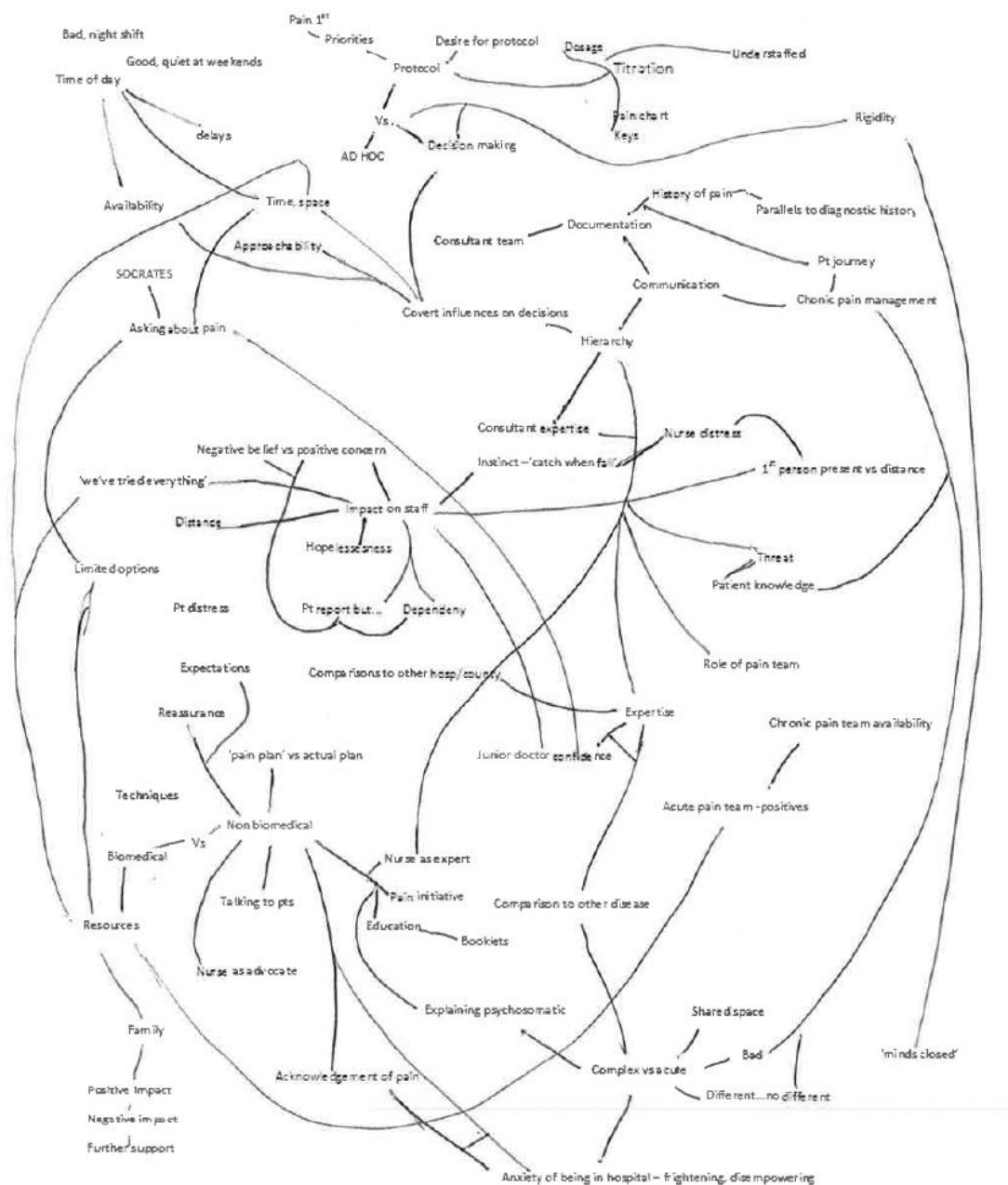
1 form for Participant;

1 to be kept as part of the study documentation,

Appendix J, first-level codes, unstructured

<p> Bad, night shift Good, quiet at weekends Time of day Pain 1st Priorities Protocol Desire for protocol Dosage Titration Pain chart Keys Understaffed Rigidity Parallels to diagnostic history History of pain Documentation Consultant team Covert influences on decisions Hierarchy AD HOC Approachability Delays Availability Time, space SOCRATES Asking about pain Negative belief vs positive concern Distance Impact on staff Hopelessness Nurse distress Chronic pain management Communication 1st person present vs distance Patient knowledge Role of pain team Chronic Pain Team availability Acute Pain Team -positives Expertise Decision making </p>	<p> Consultant expertise Instinct –‘catch when fall’ ‘we’ve tried everything’ Limited options Pt distress Pt report but... Dependency Expectations Comparisons to other hosp/county Reassurance ‘pain plan’ vs actual plan Techniques Biomedical Non biomedical Resources Nurse as advocate Family Acknowledgement of pain Explaining psychosomatic Junior doctor confidence Nurse as expert Threat Shared space Bad Different...no different ‘minds closed’ Complex vs acute Acknowledgement of pain Anxiety of being in hospital – frightening, disempowering Education Booklets Comparison to other disease Talking to pts Pain initiative Delays Pt journey Nurse Positive impact Negative impact Further support </p>
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Appendix K, relationships between codes



Appendix L, discriminative sampling

Consultation Group 1:

See that brings another issue in delay with the pain. So you know when giving Opioid you need two nurses . you can' t give it by self but if somebody is busy you are walking around looking, so you say can you help?" They say "Im busy". So 5 or 7 minutes have gone and then you need to get keys. And It's a huge big ward and the person is right down other end and if I am in side room, you're circling and circling and then something is not there. It's procrastinating factors. Finding keys and another person

.....

Interviewee 3

GD: so you talked a little bit about delays getting hold of the pain team and anaesthetists. What about delays on the wards, so it was mentioned yesterday there's only one set of keys and do you find that a problem or is that ok?

I3: There's one set of keys, I don't find it a problem. I think it helps with the security of things, it does help with the security of things, because sometimes we're short staffed it can cause problems.

Appendix M, subset of codes from second rater

Interview 4

- Availability and communication – with docs, pain team
- Documentation
- Nurse as mediator
- 'twilight' not knowing patient
- Experienced pt 'kicking off' when expecting delays – expectations
- Proof of effort by nurse
- Align with patients
- Consistency
- Dependency on drug vs 'real' need – signs of this
- Walking around as sign that pain free (vs walking around for relief, later theme)
- Keys
- 'Everyone's waiting for the pain team'
- Speak to anaesthetists

Interview 5

- Transition from epidural to breakthrough (key time for pain)....
- ...link expectations
- Short staff – ratios
- Time of day: evening vs day
- Pain build up (link removing c.p.m for surgery) and having to start again
- Separation of pain from suffering (pain plus worry, pain minus a plan)
- Non-pharma resources (e.g. pillows)
- Pain expert/Pain champion e.g. PCA expert, dose expert
- Speak to patient

Interview 6

- Walking around/smoking to relieve anxiety and worry, thus manage pain (biopsychosocial understanding)
- Not in pain because able to walk around/smoke
- Dependency, affecting memory
- First person speech – at stressful points in narrative
- Nurse as advocate, nurse as mediator
- Acceptance of pain
- Impact of pain on patient
- Treat Patient same as anybody else in pain
- Being present when pain is around vs hearing a report of it (consultant theme)

Interview 13

- Don't notice the positives
- PCA works well
- OraMorph countersign, plus incident leading to delays
- Documentation
- Pain team not approachable...
- ...Negative reaction informing future decision making (decision-making processes) (consultant theme)
- Drop in sessions on T9 regular, happens in antibiotics (consultant theme)
- Continuity i.e. in consultancy opiate vs not opiate
- Dealing with distress through separation
- Demanding complex pain pts (pt knowing their own pain/needs) ...
- ...because they are worried or bad experience (disempowerment, loss of control)
- Outcomes, pt satisfaction, more referrals to pain team

Interview 17

- Educating staff, patients..
- ..Non-pharma resources
- Shared understanding of pain
- Early spotting of complex pain
- Simple vs complex pain
- PCA training
- Beyond conventional pain ladder ..
- ..guidance on non-diagnostic pain assessment
- 'uncertainty adds to distress' (vs tolerating uncertainty? Medical model)
- Priority of pain in complex pts
- Lady not discussing chronic pain in consultation

Appendix N, themes arising in a parallel pain study

Drop in discussion to be shared with the pain champions

Areas of discussion highlighted during the drop in session:

Pain education is aimed at basic pain management and is helpful for approaches to acute pain i.e. perioperative pain, however patients with chronic pain do have more complex needs that require consideration. Reflection during this session was focused on this group of patients.

Patients with chronic pain can have ideas about their pain management, which are quite strongly held. These are often things or medications they know 'work' for them and make the pain manageable. It can then be quite frightening to be asked to consider alternatives i.e. medication changes or psychological approaches to pain. This is challenging for staff to manage.

- Altering a treatment regime or suggesting an alternative can be very frightening for patients with chronic pain – threat to psychological and physical safety.
- Increased anxiety increases the experience of pain.
- For patients with chronic pain, medication may result in a reduction of pain but may not alleviate it; they learn to live with pain – if they are laughing and joking, or asking to go outside for a cigarette we cannot assume they are not in pain.
- Psychology approaches take time but include aspects like motivational interviewing where reasons for behaviour are explored and identified in order to encourage understanding of and where appropriate, different approaches to pain management.
- Consistency in MDT approaches to managing pain is integral to good care.

Why can chronic pain patients demand analgesia but they do not appear to be experiencing physical symptoms of pain?

- The fear of suffering with pain that cannot be coped with arising from previous experience can be overwhelming, to the point that demanding medications can appear irrational.
- It is important to think from the patient's perspective.
- Being in hospital is unfamiliar, socially isolating, anxiety provoking, patients do not have control over when they receive their medications, there are less distractions i.e. daily routine, all contributing to pain being a focus of thoughts.
- Nurse beliefs and values can affect pain assessment, but it is important that they do not.
- Listen to the patient and acknowledge their pain. Pain is what the patient says it is.
- A patient with chronic pain may have altered physiological responses, or they may be used to coping with high levels of pain on a regular basis therefore they may not display physical symptoms in comparison to others.

General points:

- Pain can lead to low moods, anxiety and behaviours i.e. patients may be fearful to move around and stretch. This is not because they are being awkward, but they are fearful of their pain.
- Patients with chronic pain can influence others by talking about their treatment which is very challenging for staff.
- The frequency of medication administration on T13 south does impact significantly on nurse time – the single check Oramorph roll out will help with this.
- It is helpful for nurses to know the rationales for decisions made by the pain teams.
- Weekend plans for chronic pain patients would significantly support nurses on the ward.

Please ask the Pain Team if you have any questions about the above or would like further clarification regarding pain management.

Appendix O, additional interview prompts

Additional areas of questioning, based on Consultation groups and early interview themes (incorporated into interview schedule, appendix F):

- Dependency vs reducing pain
- Accessing off-ward teams
- Keys, cupboards, delays
- Total relief vs expecting some pain
- Experience of nursing staff and knowing a patients' pain
- Education from the pain team and knowing history of chronic pain patient

Appendix P, data-gathering process

- Consultation Group (CG) 1, with nursing staff, n=5
- ↓
- CG 2, with Junior Doctors, n=5
- ↓
- Interviewee (I) 1, Consultant Anaesthetist, Acute Pain Team
- ↓
- I2, Senior Staff Nurse, ward-based
- ↓
- I3, Junior Staff Nurse, ward-based
- ↓
- I4, Nursing Assistant, ward-based
- ↓
- I5, Senior Staff nurse, ward-based
- ↓
- I6, Deputy Ward Sister, ward-based
- ↓
- Observation – Nursing Assistant, 10.30 – 11.30
- ↓
- Observation – Staff Nurse, 11.30 – 12.30
- ↓
- I7 – Ward Pharmacist
- ↓
- I8 – Nursing Assistant, ward-based
- ↓
- I9 - Senior Staff Nurse, ward-based
- ↓
- I10 – Junior Doctor, Surgical, temporarily ward-based
- ↓
- Observation of Surgical Ward Round, 08.00-09.00, with 2 Junior Doctors
- ↓
- I11 – Junior doctor, Surgical, temporarily ward-based
- ↓
- I12 – Consultant Anaesthetist, Acute Pain Team
- ↓
- Observation – 15.00-16.30, Acute Pain Team, 2 Specialist Nurses
- ↓
- I13 – Specialist nurse, Acute Pain Team
- ↓
- I14 –Project Manager, Making a Difference Campaign
- ↓
- Observation of Gastro-Intestinal Ward Round, 07.00-09.00, 2 Junior Doctors & 2 GI Consultants
- ↓
- I15 - Junior Doctor, gastroenterology, temporarily ward-based
- ↓
- I 16 – GI director, Consultant Gastroenterologist
- ↓
- I 17 – Clinical Psychologist, Chronic Pain Team
- ↓
- I18, Consultant in Anaesthesia, Chronic Pain Team

Appendix q, solutions to pain management document

Below are a list of potential solutions to barriers to effective pain management based on themes generated from interviews and observations with staff on T9 (Gastro-Intestinal Ward). Your feedback on these would be useful. Please also feel free to include further suggestions.

Name:

Barrier	Potential solution	Comments/Ideas
Documentation/ knowledge of pain history (e.g. history of previous pain meds not known particularly for chronic patients: what has worked, what hasn't)	<u>Chronic Pain Passport</u> documenting patient journey (like in sickle cell): 1 – <i>entrust document to pt</i> 2 – <i>document previous pain meds and efficacy</i> 3 – <i>prior procedures for pain</i> 4 – <i>prior admissions for pain</i> 5 – <i>pt belief's re pain</i> 6 – <i>pt outcome scores</i> 7 – <i>demographic and disease factors</i> 8 – <i>plans for what to do at future crises</i> Name or stamp of surgical team/consultant, not just initials in documentation	Ensuring it is up to date Concerns with validity? Would be more useful for historical information rather than best pain plan because by the fact of being in hospital, the patients' current plan is not working. Could a social or family history be included Might not be overly helpful but can help with verification of patients claims of medications that have not worked
Practical delays (e.g. due to keys, short staff, dual signatures, priorities)	Second set of medication cupboard keys kept in office Single signature for Oramorph (already introduced) PCA Training for junior doctors/nurses/nursing assistants	Issues with accountability and risk Codes to doors could be seen by too many unauthorised people Accountability and risk
Disruption of Chronic pain medication routine upon entry to hospital (e.g. fentanyl patch removed for surgery)	Chronic Pain Passport would help plan future pain relief	

Availability/ Receptivity of Pain Teams (e.g. Chronic Pain Team geographically separated and not resourced for inpatient work; Annoyance among Acute Pain Team of inappropriate referrals; Nursing reluctance to contact based on previous bad experience)	<p>Phone Consultations / Informal referrals to Pain Team. For queries about patients that do not require full referral</p> <p>Brief Pain Team drop in sessions on the ward (like in antibiotics. e.g. 'we will be in interview room from 3.30pm-3.45pm on these days...'). Staff get to know pain team members and can utilize their expertise without the need for a formal referral.</p>	<p>Accountability and risk. Who is responsible if informal advice is given without full history</p> <p>Time demands, small query turns to big query</p>
Impact of distress on staff	<p>Education on early signs of burn-out for nursing staff</p> <p>Monthly team events e.g. pub, restaurant (staff morale is key predictor of burn-out and patient outcome)</p>	<p>could just be a ward poster</p> <p>link with wellbeing staff in hospital</p>
Staff Education	<p>Online Education/leaflets Checklist for suffering (for HCA, nursing assistants)</p> <p>Pain champion/pain representative on T9</p>	<p>Beginning to be introduced via the Making a Difference Campaign</p> <p>See Wellbeing Checklist</p>
Patient Education	<p>Leaflets on pain: causes and management.</p> <p>Consultation upon entry to ward with key worker/healthcare assistant with understanding of pain (before crises develop)</p> <p>Education on managing anxiety in hospital</p>	<p>Beginning to be introduced via Making a Difference Campaign</p> <p>Wellbeing checklist could be used here</p>

<p>Longer term:</p> <p>Recognition in staff that for many chronic pain patients psychological and social factors play a key role in distress, meaning they do not respond in same way to usual attempts at pain reduction</p>	<p>Geographical integration of Chronic Pain Team and funding for inpatient provision.</p> <p>Clarification of roles of acute and Chronic Pain Teams</p> <p>Increased availability of psychologist/psychologically trained staff members, to educate patients, deliver low-level psychological interventions</p> <p>Outpatient pain group</p> <p>Psychological support network/programme for staff (links to burn-out and staff distress)</p>	
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Prioritising Overall aims:

Investigating these outcomes can be a future project for nurses / registrars:

- Reduce length of stay? (info is available previous 2 years, following 2 years)
- Reduce re-admission rates? (important to know reason for discharge and admission)
- Increase patient satisfaction?
- Increase staff perceived ability to manage pain?
- Staff turnover rate?
- Pt opioid use reduction?

Appendix R, Wellbeing Checklist

Patients can find their experience in hospital distressing, not only because of pain or discomfort, but also because they may feel a loss of control over their daily routine and the plans for the coming days. As well as this, they may have had bad experiences in the past or distressing ideas about what their pain means. The following might be useful to keep in mind during a patient's first few days on the ward

1. When was last time the patient spoke to someone?
2. When was the last time the patient was mobile?
3. Do they know the care plan for the coming days?
4. Are they aware of any changes or transitions that may increase discomfort (e.g. PCA removal)?
5. Do they have any distressing beliefs about the cause of their pain that you can help alleviate?
6. Do they have any distressing ideas about their pain becoming much worse that you can help alleviate?
7. Do they know their medication routine? How does this differ from home?
8. What was their last experience in hospital like?
9. Do they know the ward routine (e.g. the time of the ward round)?
10. Have they received information about pain? Is this in a form they can understand?
11. Are they aware of non-pharmaceutical resources (e.g. mindfulness, relaxation)?
12. How well are they sleeping? Is their bedtime routine different to home?
13. What everyday responsibilities have been put on hold? Can you help with any of these? (e.g. arranging for childcare, for a pet to be fed)
14. Do they know their consultant and the nurse in charge?
15. Are they aware of someone they can speak to independent from the ward or consulting team (e.g. PALS)?
16. What role are the family members playing? Do family members have information on pain and the link between pain, stress and anxiety?